PIT AND QUARRY

JULY 1949

Huron Portland Cement Company's Expanded Plant at Alpena, Mich. (See page 96.)

In this Issue

Enlarged Plants of Huron at Alpena and Lone Star at New Orleans • Halliburton Progress Report • Quarry Improvements by Missouri and Lehigh • New Caribe Plant • N.I.S.A. Convention

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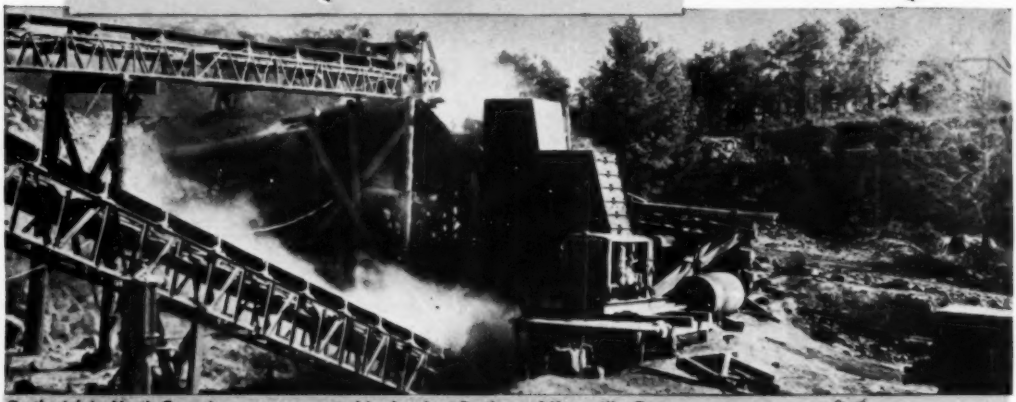
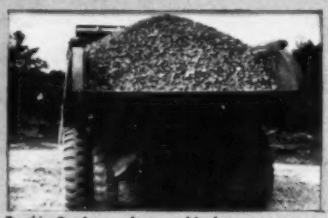
In Georgia limestone . . .

Dual Impact Action does it again



On the job in North Georgia quarry, operated by Lambert Brothers of Knoxville, Tenn.

From this: New Holland Model 5050 Breaker accepts run-of-quarry rock up to 50"...



To this: Produces clean, cubical aggregate passing -4" in one operation . . .

New Holland Model 5050 Double Impeller Breaker

reduces 50" material to commercial sizes in single pass . . .

● **Like all New Holland Breakers,** the new Model 5050, recently installed by Lambert Brothers, is a field development . . . designed to work in all types of rock, under all conditions . . . built to produce maximum aggregate at minimum cost. Simple, sturdy construction keeps costs *down*—production *up*.

Here are some quick facts—more on request:

Produces up to 400 tons per hour on 300 h.p. Heavy duty steel outer plates. Interior lined with manganese steel wear plates. Spherical roller bearings. All parts accessible; all adjustments easily made by average workman. Mounted on heavy I-beams to simplify installation. Weight 54 tons.

New Holland Double Impeller Breakers are used, recommended by operators everywhere. Get the facts. Write for complete information including location of installation nearest you. Address: Department P-79.

Read

what W. E. Lambert, of Lambert Brothers, Knoxville, Tenn., says about New Holland Model 5050 Double Impeller Breaker shown above.

"The ability of this breaker to reduce 50" material to commercial sizes in one pass is remarkable . . ."

W. E. Lambert

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

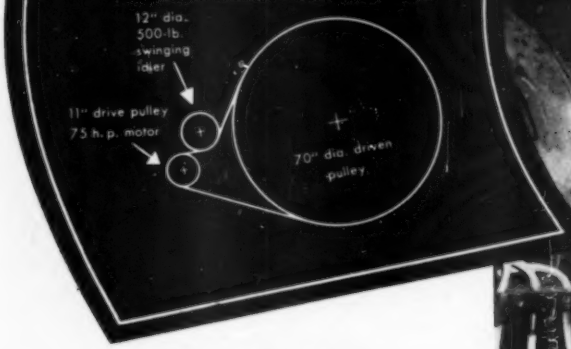
Affiliate of the Sperry Corp.

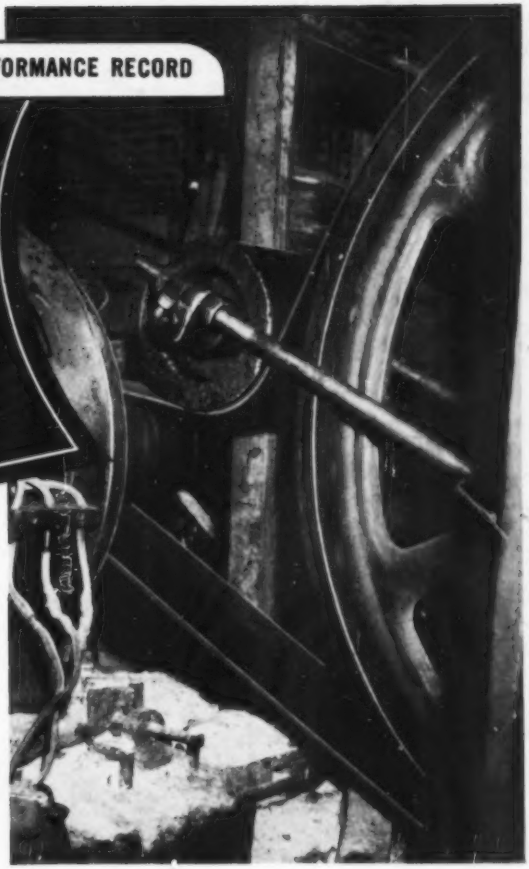
ANOTHER GOODYEAR PERFORMANCE RECORD

GOODYEAR INDUSTRIAL RUBBER PRODUCTS

GR-Specified

COMPASS 50 BELT FOR ROCK SAW





Four times the belt life at one-quarter lower cost

A CAROLINA quarry used to have plenty of trouble with their rock gang saw, driven by a conventional transmission belt. Operating on the reciprocal principle, every backstroke of the saw causes a slack in the drive belt. Then down comes a 500-pound idler—literally pounding the life out of ordinary belts in short order.

Plagued by frequent belt failures, the operator called in the G.T.M. —Goodyear Technical Man. He recommended installation of Goodyear's COMPASS 50 belt. The COMPASS 50 was installed—*ran for two and a half years*—four times as long as the best previous belt record on this drive! *And the cost of the COMPASS was 25% less!*

Savings in over-all belt cost, reduced downtime, and lower repair bills all come naturally to COMPASS users. For this patented, exclusive Goodyear construction puts sinewy endless cords into the load-carrying section of the belt, and builds the belt truly endless without a weakening splice. That means COMPASS belts have practically zero stretch — more strength to handle heavy shock loads and overloads — much longer on-the-job life.

Ask the G.T.M. to show you how COMPASS belts can answer your power transmission problems. Or write Goodyear, Akron 16, Ohio.

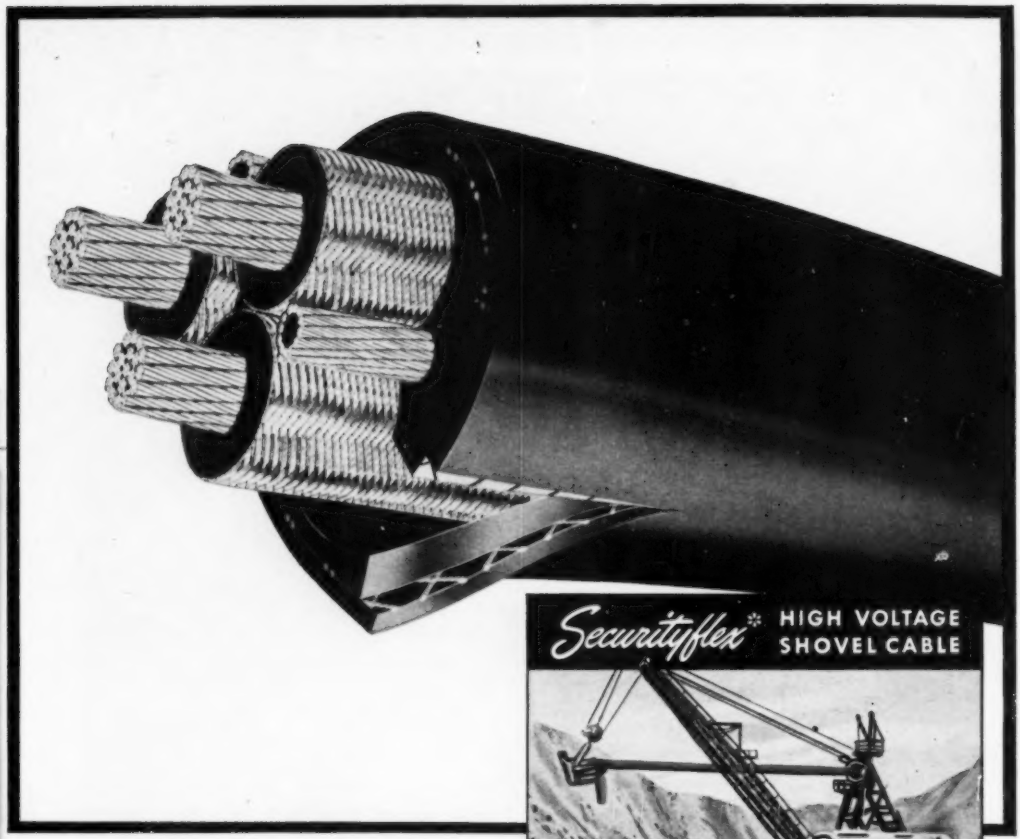
FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING *built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.*

GOODYEAR

THE GREATEST NAME IN RUBBER

Compass—T.M. The Goodyear Tire & Rubber Company

PIT AND QUARRY, July, 1949, Vol. 42, No. 1. Published monthly by the Complete Service Publishing Company, 536 South Clark Street, Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $2 additional for each year. Single copy 50 cents. Entered as second class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.



Securityflex* HIGH VOLTAGE SHOVEL CABLE

Engineered TO REDUCE DOWN-TIME

DON'T let costly electrified equipment be hampered by cable failures; invest in Securityflex High Voltage (Type SHD) Shovel Cable.

Patented grounding wires with neoprene cores are cushioned against shock, contact conductor shields at six points . . . revolutionary AB* insulation gives new resistance to corona discharge, moisture, is approved for 75°C . . . inner-belt-and-filler-combined conducts heat away for cooler operation under extreme overloads . . . new type conductor shields lie flatter, are easier to splice, can't chafe . . . extra rugged neoprene jacket resists flame and abrasion . . . cable won't kink. Here is a cable *engineered to reduce down-time.*

Write for Anaconda booklet DM 4822, which gives complete information on shovel cable. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

ANACONDA *Securityflex** **MINE CABLE**

ANACONDA

*An Anaconda Trade-Mark

A big new EASTON Type TL lift-door trailer powered by a Mack tractor. Loading in a cement plant quarry.

Big, and Easy-Going

they last longer and get more done

Big, smooth and easy. They cut costs because they cut out those *extra* trips. They take *bigger* loads at *safer* speeds. No wasted motion, no wasted effort. They wind up every day with more tons hauled *at lower cost.* Take it easy with *big* EASTON Special Purpose Trailers. For a free time and cost study of EASTON Trailer Haulage on your property write to Easton Car & Construction Company of Easton, Pa.

EASTON TYPE TL TRAILER

A thirty-ton EASTON lift-door trailer, powered by a Euclid tractor. Easton Trailers serve with all makes of commercial or off-highway truck tractors. Dumped by overhead hoist.

B-1034

SPECIAL PURPOSE

EASTON Trailers

Type TRB • 14 to 20 tons

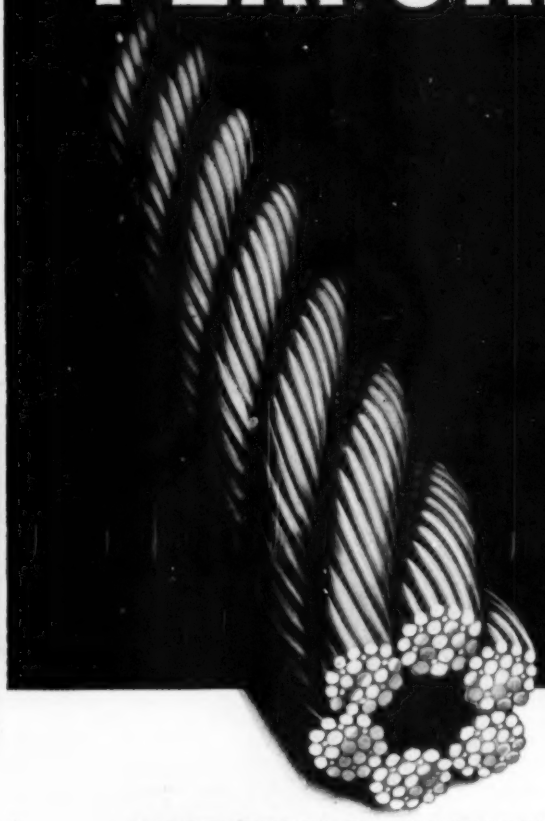
Type TL • 20 to 30 tons

Type TD • 20 to 30 tons

ALSO EASTON MINE AND QUARRY CARS AND EASTON HEAVY-DUTY TRUCK BODIES

JOIN THE TREND TO TOP

PERFORMANCE



Preformed
"Blue Center"
Wire Rope

A FIRST CHOICE OF QUARRYMEN

WHEN YOU PULL DOWN COSTS these days it's something to brag about. And with Preformed "Blue Center" Wire Rope you can cut costs to the minimum.

"Blue Center" Steel—made only by Roebling—provides shock resisting stamina and toughness. The Preforming process—improved and perfected—simplifies installation, reduces whipping and vibration, improves winding. It is not inclined to twist and kink . . . is easy to handle and install . . . can be cut without seizing. This combination of advantages gives unsurpassed life and serviceability.

Roebling Wire Rope is one of the best-known products in industry today. There's a type and size for every kind of service. Have your Roebling Field Man suggest the *one* rope best adapted to your requirements. John A. Roebling's Sons Company, Trenton 2, New Jersey.

WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. ★ ***Boston,*** 51 Sleeper St. ★ ***Chicago,*** 5525 W. Roosevelt Rd. ★ ***Cleveland,*** 701 St. Clair Ave., N. E. ★ ***Denver,*** 1635 17th St. ★ ***Houston,*** 6216 Navigation Blvd. ★ ***Los Angeles,*** 216 S. Alameda St. ★ ***New York,*** 19 Rector St. ★ ***Philadelphia,*** 12 S. 12th St. ★ ***Pittsburgh,*** 855 W. North Ave. ★ ***Portland, Ore.,*** 1032 N. W. 14th Ave. ★ ***San Francisco,*** 1740 17th St. ★ ***Seattle,*** 900 First Ave.

ROEBLING

☆ *A CENTURY OF CONFIDENCE* ☆

IF YOU HAVE A REAL ROCK SHOVEL you are equipped for output in any pit!
The Northwest Dual Independent Crowd utilizes force that every other independent crowd wastes! The Cushion Clutch eliminates the effects of shock overloads to parts under power and helps make ample power safer. The Northwest Welded Boom and Dipper Sticks have been proved in Rock work and are built for the hardest job a shovel has to do.
Cast Steel Machinery Bases and Cast Steel Machinery Side-Frames take the shocks of rock digging and maintain shaft alignment.
It's a real Rock Shovel and if you have a Real Rock Shovel you never have to worry about output at the heart of the job.
NORTHWEST ENGINEERING COMPANY
1515 Field Building
135 South LaSalle St.,
Chicago 3, Ill.
only the best for the heart of the job
MAKE YOUR KEY MACHINE A NORTHWEST CRAWLER CRANE
PROFIT
NORTHWEST
Convertible for any Mining Material Handling or Excavation Problem

THIS HEAVY-DUTY OIL HELPS YOU CUT

DELVAC OILS

PROVED performance under toughest conditions!

APPROVED by 28 crane, shovel and dragline makers—10 tractor and 45 bus-truck builders!

● Delvac "900 Series" Oils are specially designed to keep your truck, tractor and other automotive-Diesel and carburetor-type engines on the job, working full time.

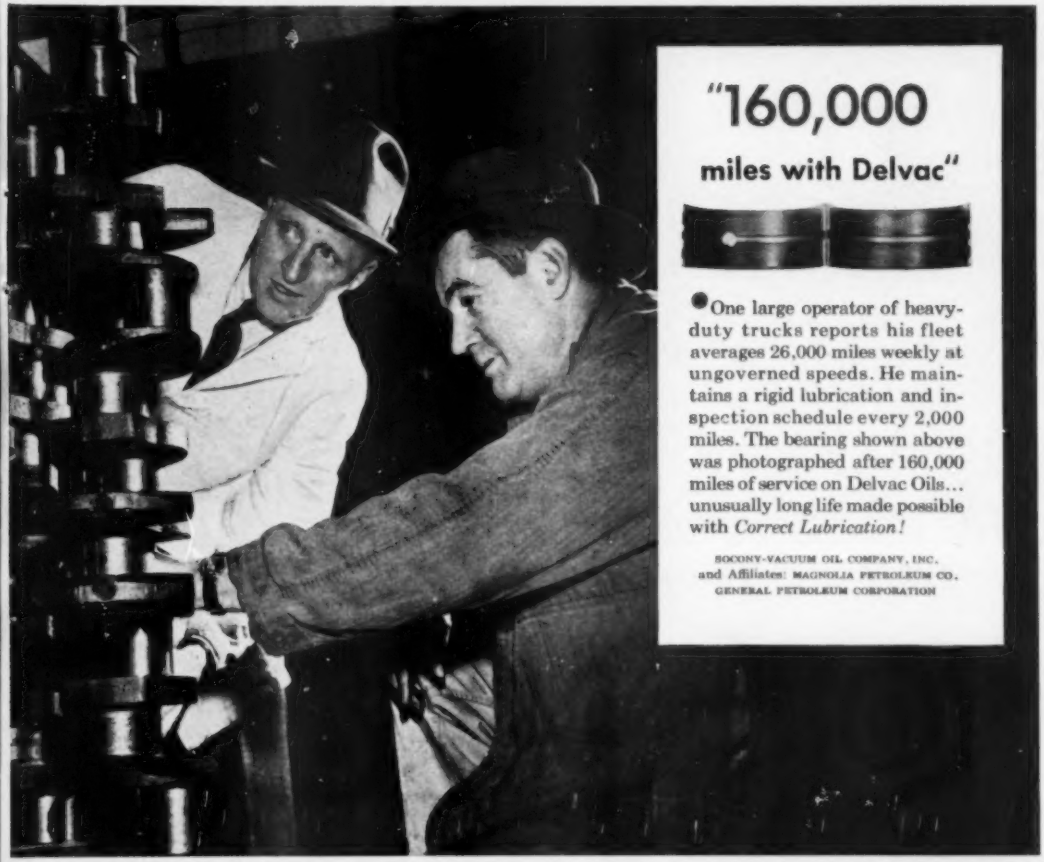
They're famous *heavy-duty* oils—give full engine protection throughout the entire operating temperature range...possess rich lubrication films that provide full piston ring seal, minimize blowby, reduce friction.

Delvac "900 Series" Oils combine exceptional oxidation resistance with special detergent properties to help keep engines clean. Contaminants remain in suspension, are easily removed by periodic crankcase draining. High resistance to chemical change protects hard alloy bearings against corrosion.

* * *

Get *correct lubrication!* Use Delvac Oils!

DOWN-TIME . . . BEAT CONTRACT DEADLINES!



"160,000
miles with Delvac"

One large operator of heavy-duty trucks reports his fleet averages 26,000 miles weekly at ungoverned speeds. He maintains a rigid lubrication and inspection schedule every 2,000 miles. The bearing shown above was photographed after 160,000 miles of service on Delvac Oils... unusually long life made possible with *Correct Lubrication!*

SOCONY-VACUUM OIL COMPANY, INC.
and Affiliates: MAGNOLIA PETROLEUM CO.
GENERAL PETROLEUM CORPORATION

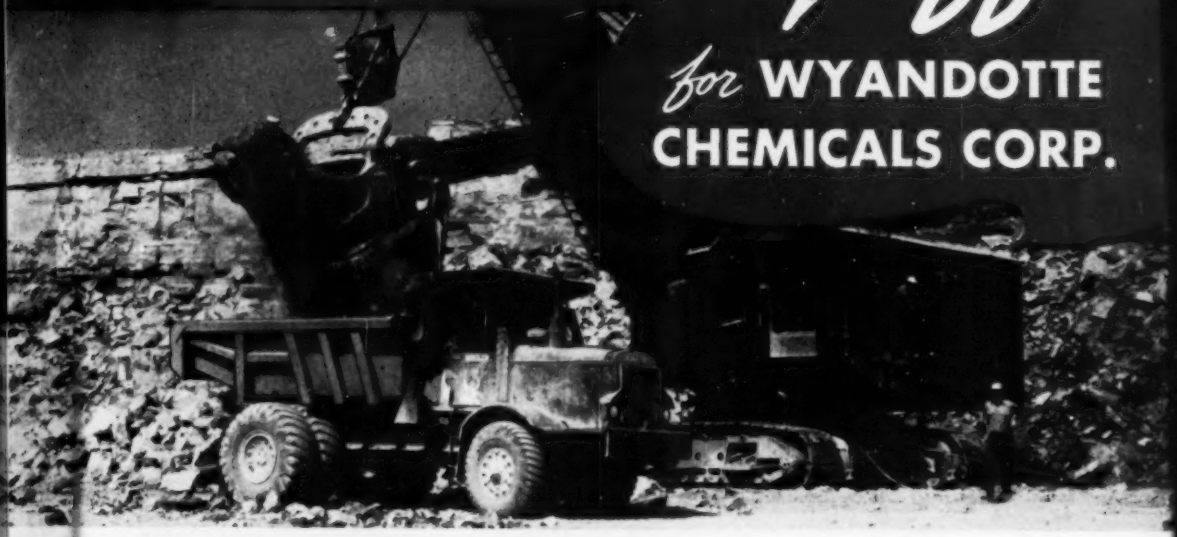
SOCONY-VACUUM
Contractors' Service

Keeps machines on the job...
Speeds work progress!

SOCONY-VACUUM

"EUCS" Pay Off

for WYANDOTTE CHEMICALS CORP.



At Alpena, Mich., Wyandotte Chemicals Corporation operates one of the world's largest limestone quarries — another job where "Eucs" are paying off by doing more work at less operating and maintenance cost.

Thirteen Rear-Dump Euclids of 22-Ton capacity replaced an electric haulage system for moving the rock from quarry to plant. Operating two shifts per day and six days per week, the "Eucs" haul approximately 800 tons per hour. The round trip averages 1¾ miles, with a maximum grade of 4 per cent. The "Eucs" are loaded with stone by shovels of 5 and 6 yd. capacity, and are used for removing overburden during winter months.

Wyandotte standardized on Rear-Dump Euclids because of their proved dependability and efficiency in mine and quarry operations. Their large capacity and fast travel speeds have increased production and lowered hauling costs at Alpena.

Euclid equipment has proved profitable for hundreds of owners on a wide range of off-the-road work. Your Euclid Distributor or Representative will be glad to discuss your requirements and show you how Euclids can do a better job for you.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

Torrington Spherical Roller Bearings Give Satisfactory Service in Simplicity Gyrating Screens

"Quad" Shake-Out Screens built by Simplicity Engineering Co. for foundry work handle up to ninety-ton flasks, cleaning them out in a matter of seconds. These tremendous loads, and the sharp throw of the eccentric shaft, are handled by Torrington Spherical Roller Bearings.

In Aggregate Screening, too, Simplicity Gyrating Screens are being used to size and wash sand, gravel, stone, rip rap, slag, etc. Slight deflection which might be caused by heavy impact loads, is accommodated automatically by these *self-aligning* bearings.

Users of Simplicity Screens report long service life and trouble-free mechanical performance. Spherical Roller Bearing life expectancy is high, since the self-aligning feature assures proper load distribution and prevents localized stress concentrations.

Torrington Spherical Roller Bearing features—self-alignment and precision construction—can give your equipment the benefits of long service life and minimum maintenance. Let our engineers help you adapt them to your requirements. Write us today. THE TORRINGTON COMPANY, South Bend 21, Ind., or Torrington, Conn. District offices and distributors in principal cities of United States and Canada.

TORRINGTON SPHERICAL ROLLER **BEARINGS**

Spherical Roller • Tapered Roller • Straight Roller

Needle • Ball • Needle Rollers

"now – with Gulf H.P. Grease

our shaker screen bearings run cool and trouble-free" says Superintendent

"Reports of bearing failures and other lubrication troubles frequently reached my office — before we switched to Gulf oils and greases", says the Superintendent of a New England trap rock company. "For example, we often had the problem of hot bearings in our shaker screens with the grease we formerly used. Now, with Gulf H.P. Grease, these bearings always run cool and trouble-free—we save time and money."

A typical example of the tangible benefits of proper lubrication with Gulf Quality Oils and Greases! Call in a Gulf Lubrication Engineer today and let him assist you in finding opportunities for improved lubrication of your equipment. In his broad experience, he has found literally dozens of ways to save money and increase production efficiency by the better selection and application of oils and greases. Write, wire, or phone your nearest Gulf office.

Gulf Oil Corporation · Gulf Refining Company

Division Sales Offices:

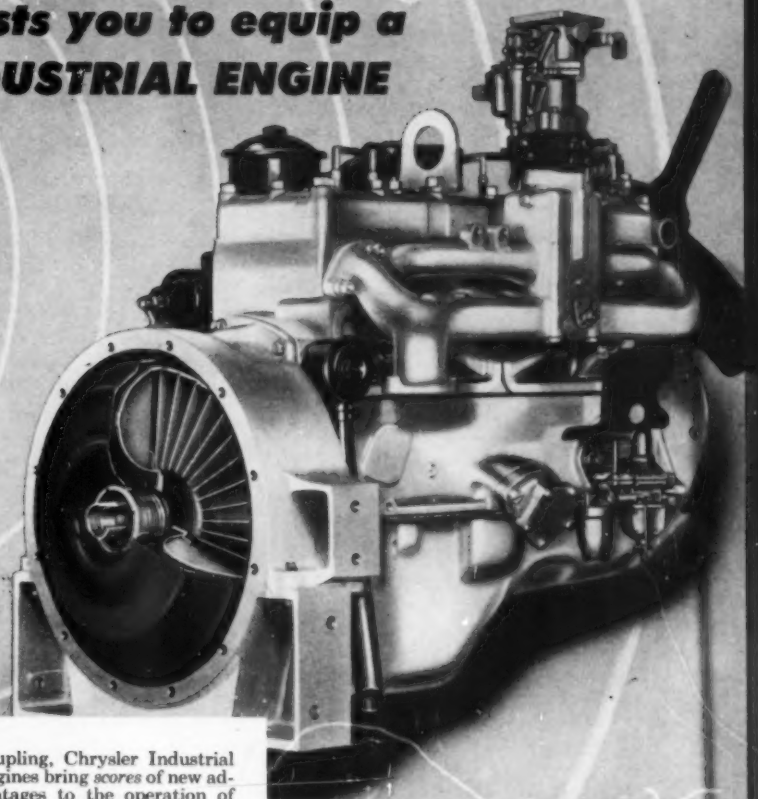
Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

GULF INDUSTRIAL LUBRICATION

IT'S AMAZING

how little it costs you to equip a CHRYSLER INDUSTRIAL ENGINE with . . .

gýrol Fluid Drive!



Does operation of your equipment require frequent clutching and de-clutching?

Is your equipment subjected to damaging shock loads? Is it desirable to speed up your engine close to torque peak with the output shaft turning at a lower speed?

Do shock loads sometimes stall your engine or cause failure of drive train parts? Would gradual oil-smooth acceleration improve your operation?

If your answer is "yes" to any of these questions, better investigate Chrysler Industrial Engines now! With gýrol Fluid Coupling, Chrysler Industrial Engines bring *scores* of new advantages to the operation of power equipment.

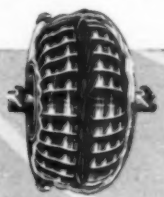
Chrysler's famous gýrol Fluid Coupling has been proved on more than a *million* Chrysler, DeSoto, and Dodge passenger cars and trucks over a period of 11 years. *Proved* on scores of industrial applications.

Its cost is amazingly low! *Actually only a few dollars more than the cost of the conventional flywheel which it replaces!* For more information, see your nearest Chrysler Industrial Engine Dealer, write us, or *mail the coupon today!*

CHRYSLER

Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE



As the driver turns inside the sealed steel drum, the confined oil produces a powerful swirling out-thrust. Instantly the Runner receives the impulsion and transmits smooth power to the load.

H

INDUSTRIAL ENGINE DIVISION, CHRYSLER CORPORATION
12200 E. Jefferson, Detroit 31, Michigan

Send us full information on Chrysler Industrial Engines with gýrol Fluid Coupling for use on _____ equipment.

NAME _____

COMPANY NAME _____

STREET _____

CITY _____ STATE _____

STROH

We have patterns for Gears and Pinions for practically all standard makes and sizes of Kilns, Coolers, Driers, Tube Mills, Rod Mills, Ball Mills, Crushers, and Preliminary Pulverizers.

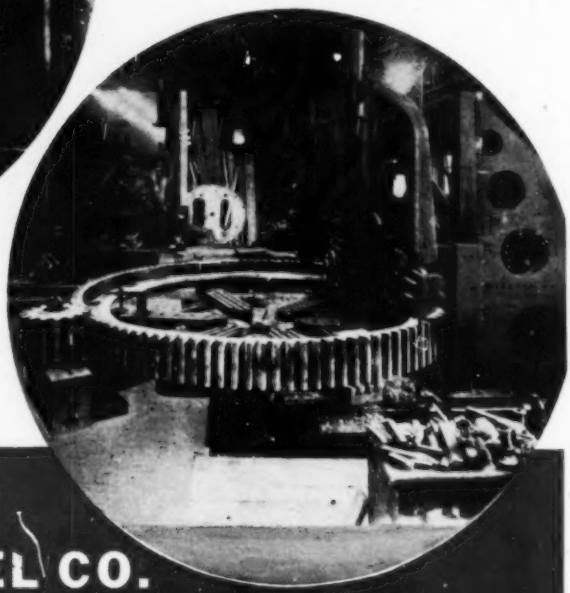
Steel Gearing for Dryers—Kilns—Coolers Ball and Tube Mills

Stroh Gears combine the abrasion resistant qualities of hard alloy with the shock cushioning advantages of soft steel.
Stroh Alloy applied to the contour of the gear tooth does these things—

Maintains original contour of Gear Tooth.
Maintains original back lash.
Cuts down replacements required.
Reduces loss of production from down time.

Stroh Alloy applied to the wearing surface of a plain carbon steel casting forms an integral part of the casting itself. It will not crack, chip, flow or spall off. Stroh Steel Gears can be shrunk on a Shaft without destroying the wear resistant properties of the Stroh Alloy.

Top—Master Gear for 11' Kiln, 120 Teeth, 4¾" C. P., 16" Face, 181.43" Pitch Diameter.



Right—Shop set up of Master Gear and Pinion to insure accuracy. Master Gear for 10' Kiln—99 T, 5" C. P., 16" F. Pinion—16 T, 5" C. P., 16" F.

STROH
PROCESS STEEL CO.
PITTSBURGH (12), PA., U. S. A.

QUARRYMEN:

Dollars Are Important to You

Dollars saved are dollars earned. So why shouldn't you save every dollar you can . . . on *delivery* costs? Dodge "*Job-Rated*" trucks are built to do just *that*.

They're priced with the lowest. They're built *to fit* your particular hauling needs. They stay *out* of the repair shop and *on* the job . . . saving money every mile you drive them.

For example, your Dodge truck will have the right one of 7 "*Job-Rated*" truck engines. You will pay only for the power you need . . . on *your* job.

Your Dodge will have the right clutch, transmission, rear axle, and every other unit . . . "*Job-Rated*" for maximum dependability; minimum upkeep expense.

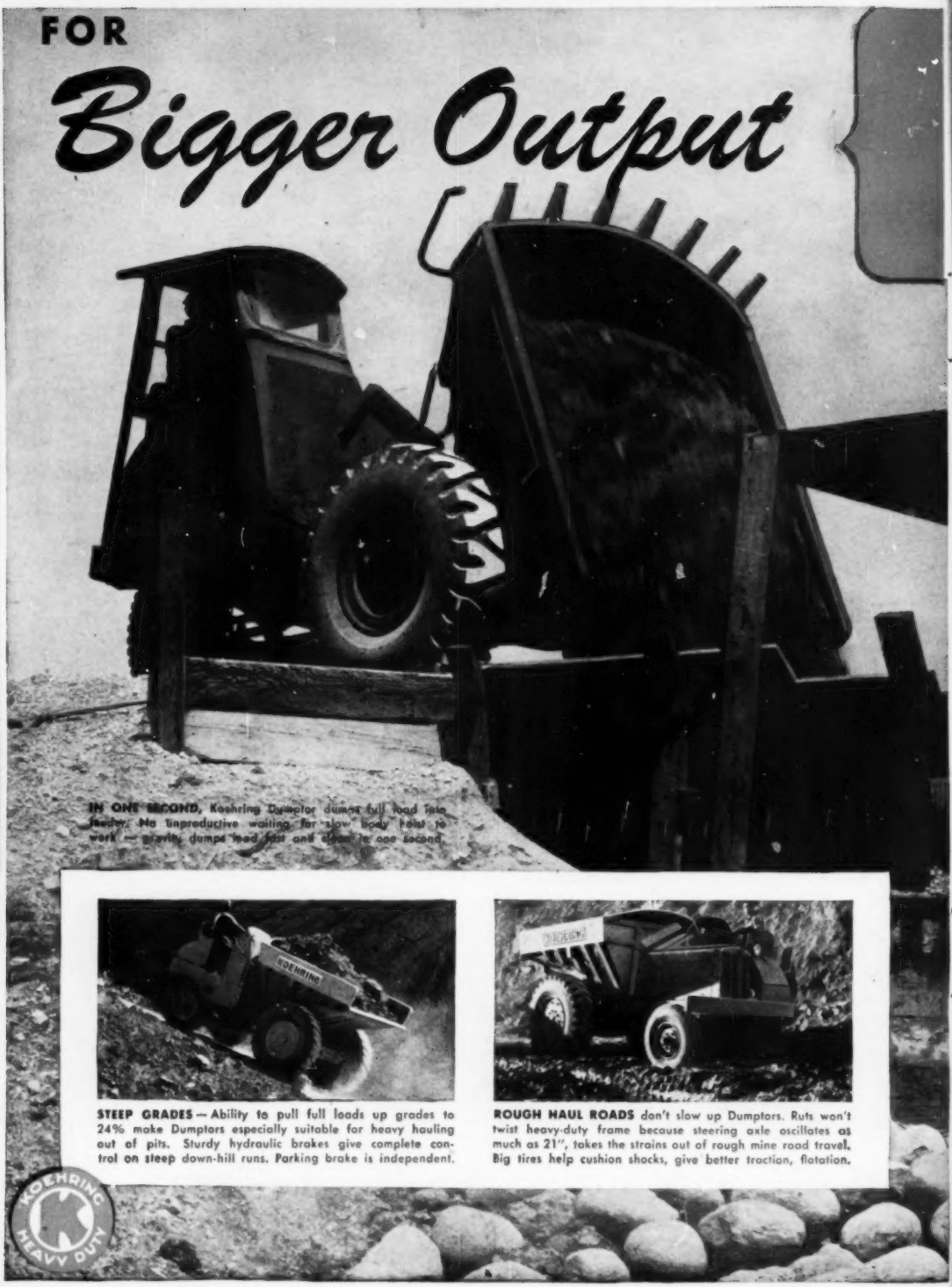
So, if dollars still count in *your* business, see your Dodge dealer. Ask him to recommend the right "*Job-Rated*" truck for your business. Remember . . . *only* Dodge builds "*Job-Rated*" trucks.

For the good of your business—

Switch to **DODGE** "Job-Rated" **TRUCKS**

FOR

Bigger Output



IN ONE SECOND, Koehring Dumptor dumps full load into feeder. No unproductive waiting for "slow" body hoist to work — gravity dumps load fast and clean in one second.

STEEP GRADES — Ability to pull full loads up grades to 24% make Dumptors especially suitable for heavy hauling out of pits. Sturdy hydraulic brakes give complete control on steep down-hill runs. Parking brake is independent.

ROUGH HAUL ROADS don't slow up Dumptors. Ruts won't twist heavy-duty frame because steering axle oscillates as much as 21°, takes the strains out of rough mine road travel. Big tires help cushion shocks, give better traction, flotation.

KOEHRING HEAVY DUTY

in mines, pits and quarries
KOEHRING DUMPTORS
load FASTER • haul FASTER • dump FASTER

ON typical, rough, off-road hauls, you can increase trips per hour, yardage per day and reduce maintenance problems with Koehring heavy-duty, 6-yard Dumptors. Here's why:

Short Turning Radius, Big Target SAVE SPOT AND LOAD TIME

Short, 19'6" turning radius and compact design let Dumptor get close in under shovel . . . save jockeying back and forth. Big, 64 square-foot body opening provides an easy-to-hit target. Result — increased shovel production, more haul-time, less spot and load time.

Heavy-Duty 6-Yard Body BUILT FOR HEAVY ROCK SERVICE

To take severest shocks of shovel-loading, all-welded Dumptor bodies are heavily ribbed with 4" channels. Bottom of seasoned 1-⅝" oak timbers, between two 5/16" steel plates, cushions load shocks. In heavy mine and quarry service, Dumptors give you less down-time, more work-time, year in, year out with less maintenance care.

Ton of Strength per Ton of Payload SPEEDS TRAVEL ON ROUGH HAULS

Koehring Dumptors have rugged 8" ship channel main frame, heavily trussed . . . 4" chrome steel drive axles . . . cast alloy-steel "I" beam steering axle, that take the twists and strains of fast off-road travel. Big rugged tires take road shocks. There are no leaf springs . . . Dumptor needs only one big double-coil spring, on steering axle. You have NO spring maintenance.

6 HP for Every Ton of Gross Weight GIVES GREATER GRADE-ABILITY

Dumptor has 6 HP for every ton of gross vehicle weight. That means more "GO," more acceleration, less shifting on grades. Also, plenty of power to climb grades to 24% with full load. Dumptors are built to stand up under the toughest hauling of mine and quarry service.

No Slow, Troublesome Body Hoists . . . DUMPTOR DUMPS IN ONE SECOND

At the dump, gravity dumps load . . . *fast*. One second and body is empty . . . you're on the way for another load. You save 15 to 25 seconds every dump. No mechanical complications . . . no body hoist maintenance. Free-swinging kick-out pan breaks suction of sticky materials . . . adds 3/16" of steel to strength of Dumptor bottom.

No-Turn Shuttle Operation SAVES SLOW TURNS EVERY TRIP

Because Koehring constant-mesh transmission makes same 3 speeds available in both directions, Dumptors are never turned on shuttle hauls. On a 1,000' haul (16 round trips per hour), this gains 8 minutes every hour.

Let your Koehring distributor show you what Dumptors can do to save money in your mine, pit or quarry.

Koehring 605 Rock Shovel Keeps Pace with Fast Dumptor Hauling Speed . . .

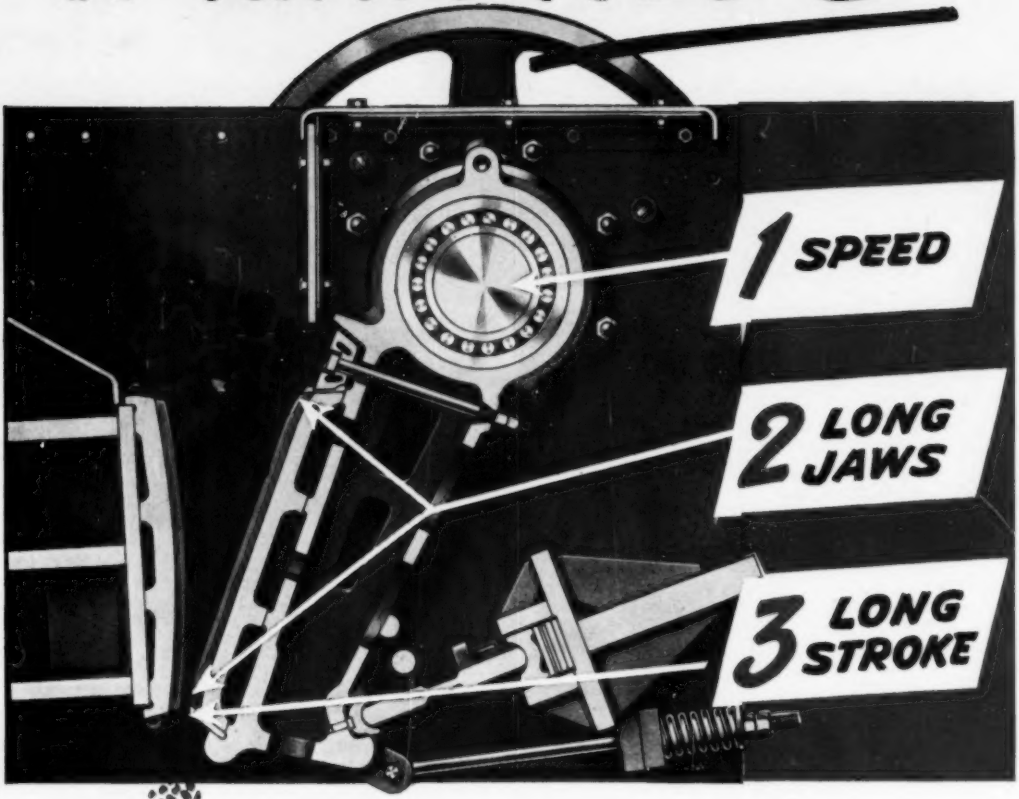
For balanced, high-production teamwork on both your excavating and hauling operations, team up your Dumptors with the Koehring heavy-duty 605 Rock Shovel. Its fast operating speeds . . . big 1½-yard dipper capacity . . . rugged, extra strong boom, with shock-absorber mount . . . and big, power-operated clutches, all keep production high, costs low. Your Koehring distributor also can show you heavy-duty Koehring excavators in ½-yard, ¾-yard, 2½-yard sizes to satisfy your exact requirements.

KOEHRING COMPANY, Milwaukee 10, Wisconsin

Subsidiaries: JOHNSON • KWIK-MIX • PARSONS

DUMPTOR—Trademark Reg. U. S. Pat. Off. XK54

It Takes ALL 3



to put the maximum amount of rock through a jaw crusher

No other crusher *excels* the A-W in *any one of the three.*

No other crusher *equals* the A-W in *all three.*

That's why no other crusher turns out as much rock.

AUSTIN-WESTERN COMPANY • AURORA, ILLINOIS, U. S. A.

Austin-Western

★★★★ Barber-Greene ★★★★

B-G COST SAVING BULLETIN No. 4901

63,000 TONS UNLOADED IN 210 DAYS FOR READY-MIX PLANT

"Not an Hour or a Penny for Repairs"

Griffith, Ind.—The Griffith Ready-Mix Company have speeded up and greatly simplified hopper-car unloading operations at their plant here—as shown by their record of unloading over 1,000 cars in 210 days. Their B-G Belt Car Unloader and Portable Conveyor are clearing 5 to 6 cars a day on a 6-day week basis.

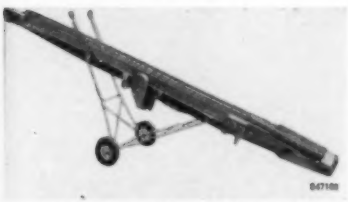
Griffith's unloading setup is simple, low in cost and effective. They keep about 60 cars of aggregate on hand, and their 358 Unloader is easily placed over the rails (it works equally well in pits), and, with the 363 Portable Conveyor unloads to a temporary stock pile at a 3-ton-per-minute clip.

Previously, a crane was used for unloading and stockpiling operations. Now it is free for a variety of other tasks around the yard.

Griffith's operators have found that the 358 won't jam up and will start with a full load on the belt. The 363 Conveyor is equally sturdy, capable of operating 24 hours a day—day in and day out—on a 3-ton-per-minute basis.

One Man Unloads 50-Ton Car in Hour to Radial Storage

Richmond, Va.—One-man unloading to radial storage bins has meant real economy to Tiller Coal Company, Inc. The B-G Coal Unloader and Radial Conveyor provide the flexibility required to unload directly into bins or trucks as the occasion demands. "We have found we can exceed everything Barber-Greene said the setup would do," said L. W. Gress, president of the concern.



047100

Ship Carries Own Unloaders

Mobile, Ala. **The good ship *Rosario* operated by the Suwanee Steamship Company carries two B-G 363 Portable Conveyors to facilitate loading and unloading cargoes of bulk materials such as sulphur, gypsum, e.c. Low initial cost and high capacity of the B-G units account for their seafaring role.**

047100

The Model 358 Car Unloader and 363 Conveyor combine higher standards of performance, higher capacities and more ability to handle all materials than heretofore available in any other loader-conveyor combination.

EFFICIENT CONVEYOR PLAN SAVES 90% OF EQUIPMENT COSTS ON $2½ MILLION BRIDGE JOB

Jacksonville, Fla.—The George D. Auchter Company of this city credits much of the savings that made possible its being the low bidder on a 2½ million dollar bridge contract to its new B-G 363 Conveyor and 358 Unloader.

This job, 30 miles from the city, offered no railroad facilities so it was necessary to barge materials to the site. Loading the barges from hopper cars was a real problem. First consideration was given to equipment that would cost over ten times that of the B-G unloading team until they learned how easily the 358 Unloader and 363 Conveyor could do the job.

047095

Frees Crane for Other Work

New Enterprise, Pa. **A 358 Hopper Car Unloader fitted in neatly with the needs of the New Enterprise Stone & Lime Company. It was purchased for unloading cinders from hopper bottom cars, thereby releasing an expensive crane which had been tied up on this uneconomical service. This highly portable Unloader is also being used to unload coal at one of their large storage yards near Bellwood at the rate of one 70-ton car every 55 minutes.**

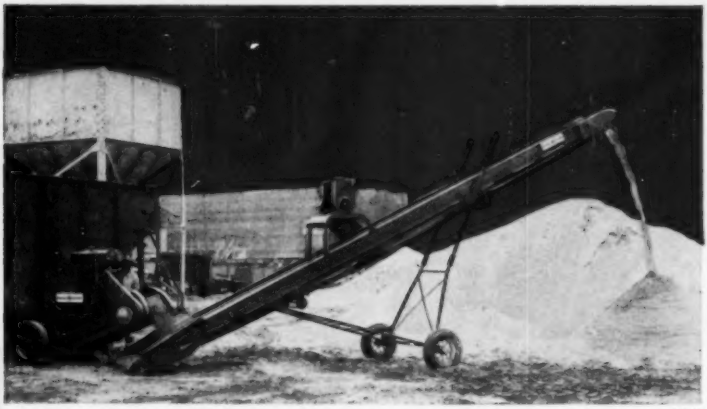
All Materials Handled by B-G Team

The result was that the 358 and 363 unloaded all the materials from cars on the Auchter Company's spur at the riverside. Material was sent directly into the barges through a chute at the discharge end of the 363 Conveyor. This, the company reports, was a high volume, low cost and entirely successful operation which was largely responsible for its being able to secure the contract.

Auchter Company is using the same unloading setup to barge materials for a power plant project located on the river. Mr. Auchter points out that due to the low cost of loading the barges, it is much more economical for his company to supply material to the job site in this manner than to go to the expense of building a railroad spur into the project.

PRTD. IN U.S.A. 155 M 5-43 AM

PORTABLE CONVEYOR UNLOADS 18,350 BARRELS OF BULK CEMENT



4 to 5 Cars per Day

NEGLIGIBLE CEMENT LOSS

In unloading cement from hopper-bottom cars for use on a cement stabilized highway project, the Hyde Construction Company provided one of the most rigorous tests ever confronted by any high-volume unloading equipment. It was a test that was met successfully by the B-G 363 Portable Conveyor which built up a record of 18,350 barrels unloaded—at an average rate of three cars per day. This, in spite of the fact that many were dubious of any such conveyor's ability to handle cement in such quantities. On some days, while the haul was short and the supply of trucks was plentiful, as many as four or five cars were unloaded by this economical, versatile Conveyor.

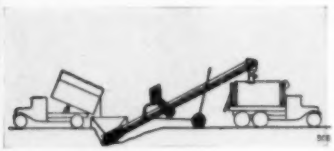
No unloader was necessary. The hopper end of the 363 was placed in a pit under a tongue-and-groove hopper and fed directly from the car. With a heavy duck cover and canvas spout, there was very little loss of cement in the unloading operations.

SAVES $30,000 ON TRUCK MIXERS BY USING PORTABLE CONVEYORS

Belleville, Ill.—A skillful combination of a B-G 363 Conveyor with a team of dry batch trucks has enabled the Hoeffken Brothers to maintain a fast-moving, ready-mix concrete business with a minimum of investment.

Hoeffken Brothers operate two ready-mix trucks. These trucks are supplied by six dry batch trucks and their B-G Conveyor. The dry batch trucks are used to enable the more costly ready-mix trucks to cut their haul down to a minimum, thereby increasing their daily capacity to the extent where additional ready-mix trucks are not required.

For one paving job located 15 miles from the Hoeffken Brothers batch plant, materials were delivered to the ready-mix trucks ½ mile from the job by the dry batch trucks. The company reports when the haul exceeded this ½-mile figure, they hooked the 363 Conveyor to the water truck and trailed it down the road to another more desirable location. The Conveyor used is 35' long with a corrugated sheet metal cover and a large hopper at the charging end. Batch trucks dump a 4-yard dry batch of concrete into the conveyor hopper and in less than 2 minutes a 4-yard ready-mix truck is ready to go. Hoeffken Brothers figure that they have saved in the neighborhood of $30,000 in over-all investment in production equipment.

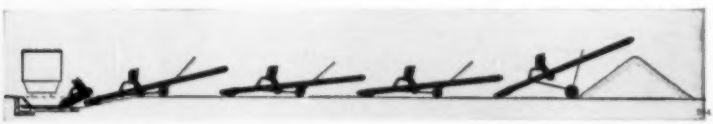


Foundry Cuts Coke Unloading Costs 76%

Rockford, Ill.—New, modern unloading equipment has enabled the Greenlee Bros. & Co. foundry to cut costs for unloading a car of coke from $20.00 to $4.80 per car. This substantial saving is accredited to the performance of their 363 Portable Conveyor and 358 Car Unloader—which are quickly paying for themselves in this 100-car-a-year operation.

Additional savings are reported by Greenlee Bros. through the reduction of demurrage charges due to the ability of this unloading-stockpiling "team" to get to work fast and operate steadily at maximum capacity.

Their all-material B-G Unloader and Conveyor are also used to unload fluxstone and foundry sand.



Unloader-Loader Team Does Many Jobs for Cement Plant

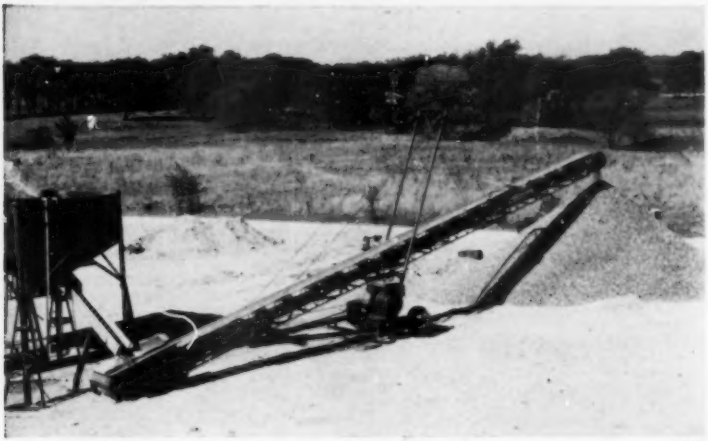
Charleston, S. C.—Production equipment has to be kept working to pay off to the best advantage and it is on this basis that the Carolina Giant Cement Company keeps its B-G 363 Conveyor and 358 Car Unloader busy as general utility equipment on a variety of jobs all over the plant. First, they are frequently at work stockpiling coal from hopper cars along the company's rail siding. Later, the 363 is used in loading the coal from the stock pile for use in the plant.

Gypsum is brought to the plant in box cars and here the 363 is fed by hand to transfer the gypsum from the box cars to a bucket elevator which carries the material up to silos.

Recently when the plant was being altered, it was necessary to drive piling and build foundations inside of the buildings. When this was done, the 363 was used to transfer dirt through a window to the inside of the building for backfilling around the foundation.

Well pleased with the general usefulness of these production tools, Mr. F. M. Murray, shop superintendent, further adds that at times the 358 Unloader has to operate under the most adverse conditions—often the lower half is in water underneath the rails. As in so many other tough jobs, the 358 gives high capacity, dependable performance even under these unsatisfactory conditions.

"A BEAUTIFUL RIG ON OUR SEWAGE PLANT JOB" says B-G OWNER



Heavy Duty Conveyor Runs Up Total of 80,000 Tons of Stone Handled

Spans Canal in Loading Trucks from Railroad Cars

Worcester, Mass.—80,000 tons of 3¼" crushed stone for this city's new sewage treatment plant were loaded to trucks at a 1000 ton per day rate by a B-G Heavy-Duty Conveyor owned by the V. Barletta Company.

Loading up to 1000 tons per day, the 24" x 60' conveyor spanned a 15-foot canal between trucks and the railroad cars. Mr. Barletta reported that this daily capacity was limited only by the ability of the railroad to supply cars, and could have been much higher if they had been available.

Further, Mr. Barletta states, "This conveyor is a beautiful rig. There is absolutely no comparison with any other method of unloading bulk material from cars to truck or storage."

Barletta's B-G Conveyor has been widely useful in the years since it was purchased. A standard Heavy-Duty Conveyor, it is portable, equipped with full-swiveling wheels for radial stockpiling—one of the full line of B-G Portable Conveyors available in belt width of 18", 24", 30" and 36" in lengths up to 150'—capacities to 400 t.p.h.

Half Million Yards of Stone Moved with Practically No Maintenance

Montgomery, Ill.—Nineteen years ago the Fox Valley Gravel Co. bought a Heavy-Duty Portable B-G Conveyor and put it to work in their quarry. At that time, it was an 18" x 30' Conveyor. Today it is an 18" x 60' Conveyor with a total of 500,000 yards of crushed stone to its credit.

H. C. Leppert states it's an impressive record and backs his opinion with a cost sheet that shows the replacement of only one belt carrier in nineteen years.

This conveyor is equipped with all-welded, plain-bearing belt carriers that are noted for rugged endurance. Typical of all B-G "Portables," it is built up of Standardized Sections and is easily shortened or lengthened as in the case here, where it was lengthened to 60' when the need arose.

County Stockpiles 70,000 Yards with Zero Dollars Spent for Repairs

Geneva, Ill.—The Kane County Highway Department furnishes added evidence of the usefulness and low operating expense of B-G Heavy-Duty Portable Conveyors in a recent report. The conveyor has seen constant service during the winters since 1944—stockpiling 70,000 yards of crushed stone for use in summer highway work—and they have yet to spend a penny for replacement of any part. An 18" by 60' unit, their B-G Conveyor helps materially in promoting low cost highway maintenance.

Have you seen the B-G City?

Here is a novel and interesting color illustration of the imaginary Barber-Greene City, showing almost countless operations in material handling, ditching and bituminous construction.

Write for your free copy.

Peach Pits by the Yard Via Versatile Portable Conveyor

Los Angeles, Cal.—Peach pits, walnut shells, apricot pits and the like are not allowed to go to waste by progressive food industry operators such as the Agrashell Corporation, producers of insecticides, resins and oils. And companies such as this are turning to the B-G Model 363 Portable Conveyor as an ideal means to handle this exotic bulk material in large quantities on a steady, day-in and day-out basis. Here the material is brought to the plant in side-dump gondola cars and fed through a portable hopper to the receiving hopper of the B-G Conveyor. The 363 transports material into the plant for further processing.

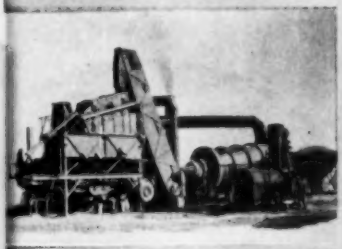
THE B-G LINE CUTS COSTS ALL ALONG THE LINE...

See Barber-Greene for:

B-G BUCKET LOADERS: Crawler or pneumatic-tire mounted. For low cost truck loading of bulk materials. Capacities up to 3 cu. yd. per min.

B-G DITCHERS: Crawler and pneumatic tire mounted, for digging trenches from 5½" wide, 4' deep to 24" wide, 8' 3" deep.

B-G PERMANENT CONVEYORS: Complete, standardized equipment including carriers, take-ups, drives, frames, etc.



B-G BITUMINOUS PLANTS: Highly portable plants for producing all types of mixes—up to 120 T.P.H.

B-G FINISHERS: Automatically place smooth level surface regardless of variations in subgrade.

B-G COAL YARD EQUIPMENT: Belt and chain-and-flight Portable Conveyors; self-propelled, pneumatic-tired. Also, hopper-car Unloaders.

Use Barber-Greene's 30 Years of Experience to Help You Plan Your Job. It can be Valuable and is at Your Service

It always pays to eliminate guess work. Barber-Greene offers you the benefit of over thirty years experience in designing and building equipment proved year after year on jobs—and in industries—like yours. Barber-Greene's Representatives are material handling specialists with practical experience in successfully applying the right machine to jobs like yours. Consult your Barber-Greene Distributors, or write directly to Aurora, Illinois, for information you need to do your job most profitably.

Barber-Greene Company
Aurora, Illinois
Cable address "Bargreene"

Send information on the Barber-Greenes checked below as indicated:

- ☐ 363 Conveyor
- ☐ 358 Unloader
- ☐ Heavy-Duty Conveyor of _____ belt width, _____ length and or _____ capacity
- ☐ _____ Other B-G Equipment
- ☐ Have a Representative Call

Name _____

Company _____

Position _____

City _____ Zone _____ State _____

Before You Bid . . . Before You Buy . . . Send This Coupon!

The coupon will bring you complete information on any Barber-Greene machine without cost or obligation.

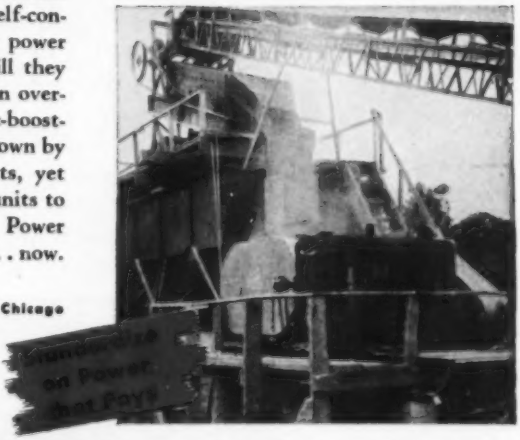
We will be glad to have our representative call to discuss your material handling problems with you.

We maintain a Department for the sole purpose of solving your material handling problems.

BARBER-GREENE COMPANY
Aurora, Illinois

INTERNATIONAL DIESELS deliver the maximum amount of work for fuel consumed. As self-contained, independent power units they'll carry power loads within their range continuously. And still they have reserve lugging ability to overcome sudden overloads. In the sensitive speed governor, a torque-boosting device acts instantly when speed is pulled down by the load. • "Scotch" with fuel and lubricants, yet tireless on the long grind, these are the power units to fulfill your requirements. Your International Power Unit Dealer can supply the size you need . . . now. Contact him.

INTERNATIONAL HARVESTER COMPANY • Chicago



International UD-18A Power Units drive this rock-crushing and screening plant. Securely sealed from the thick dust clouds, these 125-h.p. diesels keep on working at low cost.

Write for Diesel Catalog and "Power in Pits and Quarries" folder.

CRAWLER TRACTORS
WHEEL TRACTORS
DIESEL ENGINES
POWER UNITS

INTERNATIONAL HARVESTER

INTERNATIONAL
INDUSTRIAL POWER

SMOOTH-PERFORMING CP COMPRESSORS

cut operating costs

On these CP-500 Diesel-driven Portable Air Compressors, six-cylinder Caterpillar D-13000 engines . . . and the V-8 arrangement of compressor cylinders . . . promote smooth, economical performance.

The gradual speed regulator adapts engine speed to air demands, holding fuel consumption to a minimum so that CP Compressors operate at partial loads even more economically than at full loads. This CP feature also minimizes wear and tear, keeping down maintenance costs.

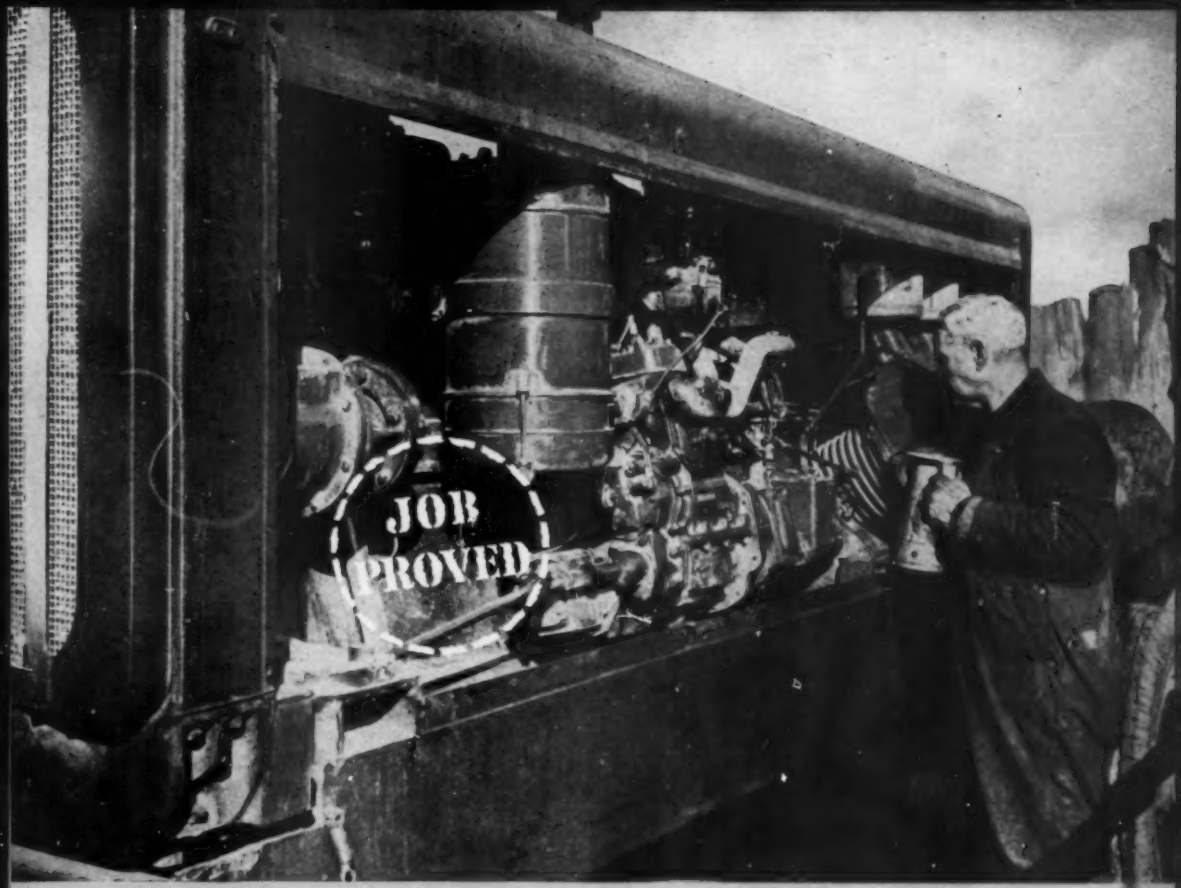
CP Portable Air Compressors are available in gasoline-driven models of 60, 105, 160, 210 and 315 c.f.m., actual capacity, and in Diesel-driven models of 105, 160, 210, 315 and 500 c.f.m.

Write for detailed information.

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES



DIESEL MAINTENANCE CUT 50%

Sun Diesel Lubricant Eliminates Hard Carbon, Stops Sludging, Ends Costly Bearing Failures

A company using many diesels to power cranes, air compressors, and heavy-duty earth-moving equipment found itself in trouble. Piston rings were sticking with hard carbon; sludging was causing clogged oil-pump screens, bearing failures, and abnormal cylinder wear. As a result, there was frequent necessity for complete engine overhauls. Downtime was excessive.

On the recommendation of a Sun Engineer, the company changed to a Sun "Job Proved" diesel lubricant. Since then, two years have passed—two years of trouble-free operation. There have been no stuck rings, no bearing failures, no clogged oil-pump screens. Cylinder wear is at a minimum. General maintenance costs have been reduced 50 percent. Efficiency is way up.

Whatever your lubrication needs, Sun "Job Proved" Products can help reduce operating and maintenance costs, and increase your output. The services of a Sun Engineer are available without obligation to make a lubrication survey of all your mechanical equipment for quarrying, preparing and transporting rock products. He will be glad to recommend the Sun lubricants precisely suited to your requirements. Call the nearest Sun Office for further information.

SUN OIL COMPANY • *Philadelphia 3, Pa.*
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SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO

LIGHT IN WEIGHT

BIG IN VALUE

B37 Paving Breaker

Joins famous Gardner-Denver family

Weighs only 38 pounds! Yet the Gardner-Denver B37 Paving Breaker is packed with many of the same big values that have proved so popular in the medium B67 and heavy B87 machines.

The tough-slugging B37 makes fast work of light demolition jobs. It's light and safe in the hands of the operator who must work from scaffolding, or wherever footing is treacherous. It's built to endure years of hard work. Here are some of the reasons why:

Renewable chuck liner — easily replaced at low cost — a new liner protects both tool and breaker against a loose-fitting shank.

Double-life hammer — block type piston hammer is reversible for double life — an exclusive feature. Use of tappet minimizes wear on hammer striking face. Tappet operates in renewable bushing.

Extra safety — exclusive throttle valve lock works like the safety on a gun — prevents accidents before they happen.

Easy riding — fast cutting action without violent recoil means less operator fatigue. Holding handles stay cool.

Low air consumption — with efficient low-lift plate valve. Long piston stroke gives hard-hitting blow. Exhaust will not "freeze."

Quick acting latch type steel retainer — holds tool securely.

Positive lubrication — integral oil reservoir meters oil to every working part, including tool shank. Lubricated shank reduces chuck wear and breakage of gads.

For complete information, write Gardner-Denver Company, Quincy, Illinois.

Specifications for GARDNER-DENVER B37 PAVING BREAKER

Weight	38 lbs.
Piston Diameter	1⅞"
Length	22"
Size of Tool Shank	1" Hex. x 4¼"
Air Hose Recommended	¾"
Weight, Boxed for Shipment	61 lbs.
Boxed Dimensions	8" x 16" x 26" 1.9 cu. ft.

GARDNER-DENVER

SINCE 1859

LOW

These letters stand for Low Cost per Unit of Work — the *real* yardstick in measuring wire rope economy.

Once in a while you may run across a wire rope that's lower in first cost than Bethlehem's. But with wire rope as with anything else, first cost isn't the true measure of economy. The rope with the higher price tag may be much more economical in the end — because of the longer, better service it gives.

On the basis of long-range economy — *true* economy — we'll stack Bethlehem rope against the field.

Cost per Unit of Work is a flexible term, varying with different industries. It can mean the rope cost per yard of rock moved by a power shovel; the rope cost per ton of coal pulled up a hillside; or the rope cost per ton-mile in oil-country drilling. But however you use wire rope, whatever your system of records, you can be sure of this: Bethlehem wire rope means *low* Cost per Unit of Work.

That's because the Bethlehem product is a quality product all the way through — one that is conscientiously made from crown wires to core.

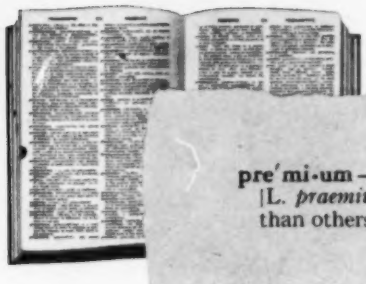
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

*LOW COST PER UNIT OF WORK

CHASE BAGS

THE PREMIUM PACKAGE



pre'mi·um—(prē'mi·um; 159), *n.*; *pl.* PREMIUMS (-umz). [L. *praemium*, orig., what one has got before or better than others.

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Your product is *important* to you and to your customer. So . . . don't just put it in a bag . . . put it in a Chase Bag—the premium container for your premium product—the container that gives you all 6 of these important advantages:

1. Better Appearance
2. Clean, Colorful Printing
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4. Better Materials Protect Your Product
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BWH
DEPENDABLE RUGGEDNESS
BOSTON WOVEN HOSE & RUBBER CO.
CONCORD
STEAM #10
BOSTON, MASS.
BWH
1. Tough, long-wearing, abrasion-resistant cover.
2. Asbestos braid insures maximum cover adhesion, and includes NEW type static conducting wire.
3. High-tensile steel wire for strength, for safety.
4. Heat & oil resistant tube.

BWH WIRE BRAID STEAM HOSE CAN REALLY "TAKE IT"

HERE'S PROOF!

Tests in the field show our new Concord #10 Steam Hose is a star performer. It doesn't get stiff and brittle, as some hose does when saturated with scalding steam. It's easy to handle. It's next to scuff-proof, even when banged against machinery and yanked over rough surfaces. But somebody raised another question.

"What happens," they asked, "if this wire-braid hose should be accidentally run over by a truck?"

To answer that question, we deliberately ran a 30-ton truck over our new Concord #10. What did happen? Nothing! The hose kept right on with its trouble-free performance.

Naturally we don't recommend such treatment. But we do say it's compelling proof that our Concord #10 is the last word in sturdiness. Here's what makes this hose outstanding:

1. Same dependably strong, heat and oil resistant tube that has won fame for extra service in BULL DOG Steam Hose.
2. Braids of high-tensile steel wire, heat and pressure resistant.
3. Asbestos braid assures perfect cover adhesion, includes NEW type static-conducting wire.
4. Tough cover, specially designed to resist abrasion and high temperatures.

With these features, it's easy to see why the new Concord #10 meets every need for steam hose that withstands 200 lb. working pressure with SAFETY, does a real job in helping you cut maintenance costs.

☆ ☆ ☆

HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems. We're specialists in solving them. Consult your nearest BWH distributor or write to us direct.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

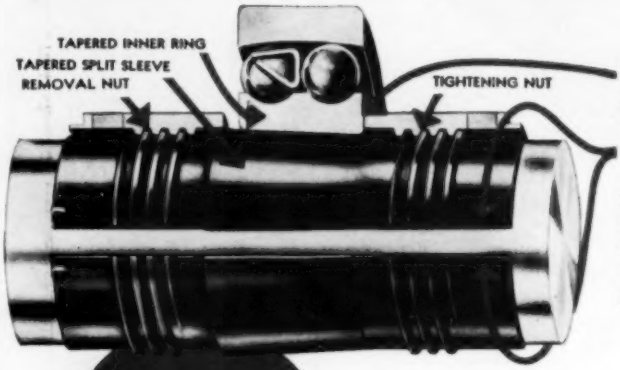
Distributors in all principal cities

PLANT: CAMBRIDGE, MASS., U. S. A. ★ P. O. BOX 1071, BOSTON 3, MASS.

SOMETHING NEW!

SKF introduces the
UNIT PILLOW BLOCK
featuring a tight fit
between bearing and shaft

Here's How It Works



TIGHT FIT results when the tightening nut pushes the tapered inner ring over the tapered split sleeve.

CONCENTRIC GRIP is firm and positive—as the split sleeve contracts and wraps around the shaft. Removal is accomplished by reversing the process—with tightening nut loosened, removal nut pushes inner ring off the sleeve.

ON or OFF
in a few
seconds

The *new* SKF SUA Unit Pillow Block is completely assembled, lubricated and ready for immediate use. Available in "free" or "held" types and in shaft sizes from $1\frac{7}{16}$" to $2\frac{7}{16}$".

Its SKF-exclusive Align-O-Seals prevent lubricant leakage and dirt intrusion. Designated as type SUA with ball bearings—and type SUAR with spherical roller bearings.

No exposed bearing . . . no lock screws to raise troublesome burrs on the shaft . . . the nut is locked to the sleeve . . . and even though the shaft vibrates, the concentric grip will not loosen.

For more information, check your local authorized SKF Distributor, or write: SKF Industries, Inc., Philadelphia 32, Pa. 6681

Bearings and pillow blocks engineered by **SKF**

7 YEARS AT HARD LABOR AND STILL GOING STRONG!

Millions of tons of minus 10" crushed stone with fines have been conveyed by this belt in the last 7 years.

The condition of the belt is so good that the owners expect additional years of service before replacement.

The fine performance record of this belt is due to closely coordinated planning by engineers representing operators, equipment manufacturers, and engineers of the United States Rubber Company. This "Three-Way Engineering" can produce results for you. Whether the installation is large or small, lower cost haulage, larger and steadier output over a longer period of time are assured.

When you plan a new conveyor system, or when you wish to replace your present belt, get in touch with United States Rubber Company engineers. They will help you solve your belt haulage problems. Write Mechanical Goods Division, 1230 Avenue of the Americas, New York 20, N. Y.

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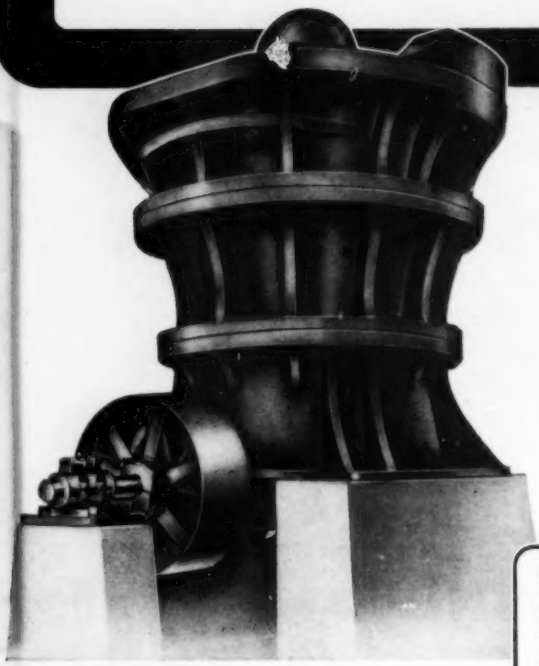
UNITED STATES RUBBER COMPANY

WHEREVER CEMENT IS PROCESSED PROFITABLY... YOU'LL FIND TRAYLOR EQUIPMENT ON THE JOB



For Primary Crushing in huge quantities, a favorite item of equipment is the Traylor Bulldog Gyratory Crusher like this 54" model which Traylor built for a cement plant in Montreal, P.Q. and one in Great Britain.

On six continents, successful cement processing and Traylor equipment are synonymous. In addition to giving operators "down under" a lift and brightening the lot of producers on the "dark continent", Traylor equipment is turning out bigger profits for dozens of cement manufacturers right here in America.

Learn how Traylor equipment can make your cement manufacturing operations more profitable. Outline your problem. Our recommendation can mean "dollars-in-your-pocket" whether your interest centers around a single piece of equipment or a complete plant.

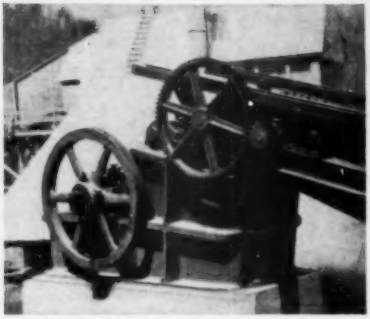
Write for Processing Equipment Bulletin 3121 today.

TRAYLOR ENGINEERING & MANUFACTURING CO.
163 Mill Street, Allentown, Pa.
Sales Offices: New York, N.Y., Chicago, Ill., Los Angeles, Calif.
Canadian Mfr: Canadian Vickers, Ltd., Montreal, P.Q.

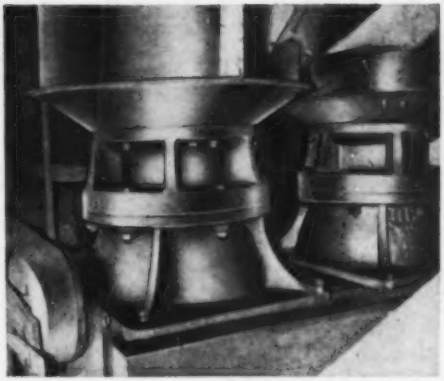
Traylor CEMENT

A "TRAYLOR" LEADS

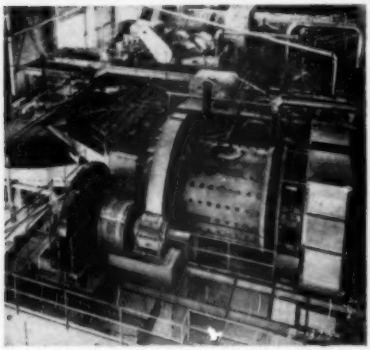
Here are a few examples



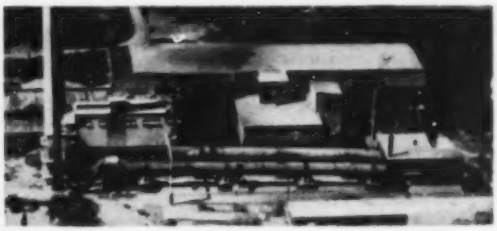
Lesser volumes can often be most profitably crushed with a Traylor Jaw Crusher such as the Type H shown here with a Traylor All Steel Apron Feeder to provide absolute feed control.



For Reduction Crushing, the Traylor TY, with its exclusive bell head and curved concaves, has an extremely favorable output-to-horsepower ratio. This is one of a pair employed in a California cement plant.

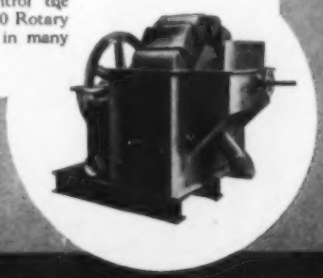


Traylor Ball Mills were installed for both raw and finished grinding when this plant was built in 1948 at Portland, Colorado. This company has a total of 27 Ball Mills in operation at plants in Colorado, Alabama and Utah.



This picture shows a 9'6" x 250' Traylor Rotary Kiln and Tube Cooler operating in a modern cement plant at Okay, Arkansas. A new plant built by this Company includes four 10' x 400' Traylor Rotary Kilns.

Traylor Slurry Feeders control the supply of raw materials to 80 Rotary Kilns in wet-process plants in many states and foreign countries.



PROCESSING EQUIPMENT

TO GREATER PROFITS

FOR 50 YEARS

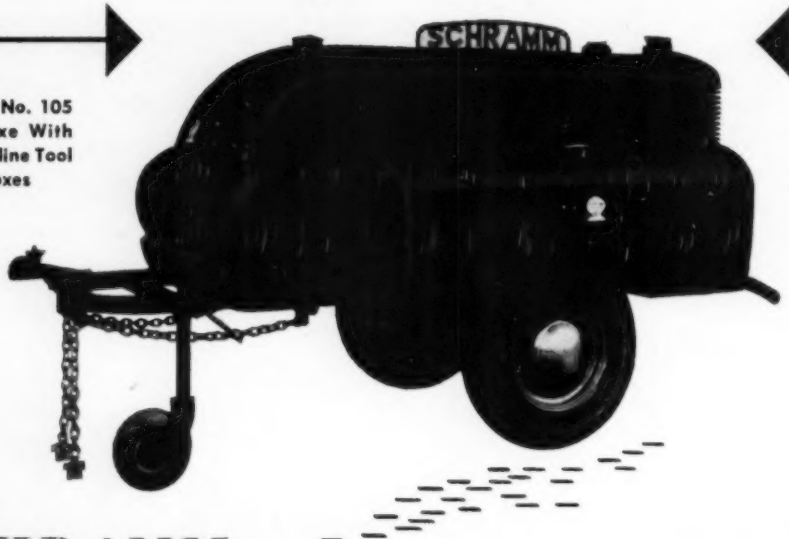
SCHRAMM

HAS LED THE WAY WITH

"FIRSTS"

IN AIR COMPRESSOR IMPROVEMENTS

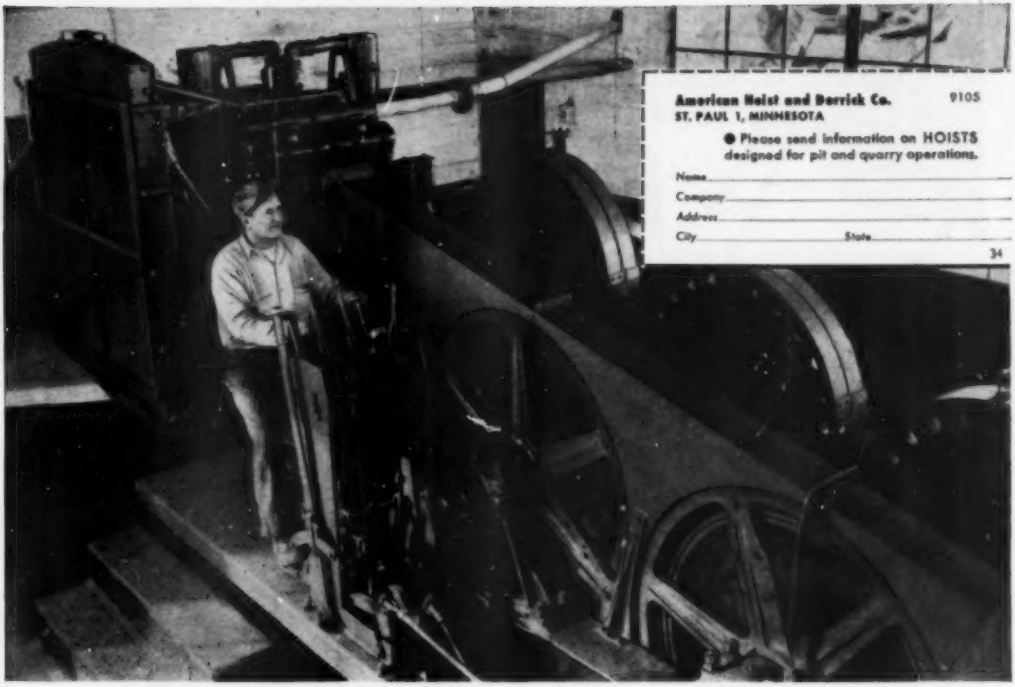
1900	Independent service and repair shop for Industrial Compressors and Power Plants in Philadelphia.
1908	First really portable Engine Driven Compressor built.
1917	Multi-Cylinder Engine Driven Multi-Cylinder Compressors.
1918	Designed and built SCHRAMM engines for operating SCHRAMM Compressors.
1918	Portable Compressor with clutch between Engine and Compressor.
1919	Portable Diesel Engine Driven Compressor.
1923	Electric starting standard on all engine driven models.
1935	Built two-staging portable Engine Driven Compressors, also air-cooled single and two stage models.
1936	Perfected mechanical intake valve, the most progressive improvement in Portable Compressor design. Also eliminated out-moded two stage and air cooled compressors.
1938	Built live, self-sealing, easy turning Hose Reels.
1940	Designed large substantial tool boxes for carrying large assortment of air tools.
1949	The *PNEUMASTAT* another SCHRAMM innovation, that cuts fuel costs up to 50%. Also the SCHRAMM engine and compressor block with interchangeability of parts, became standard equipment on the model #105.



Model No. 105 De Luxe With Streamline Tool Boxes

SCHRAMM INC.

THE COMPRESSOR PEOPLE • WEST CHESTER • PA.



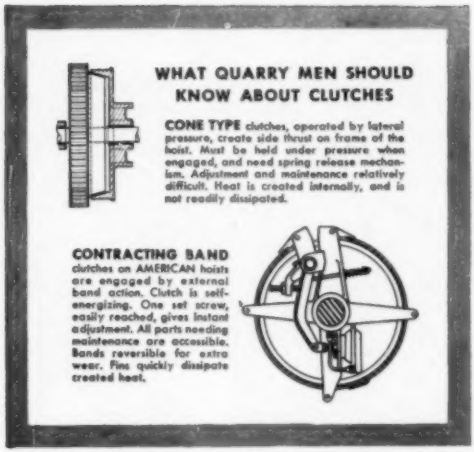
American Hoist and Derrick Co. 9105
ST. PAUL 1, MINNESOTA

● Please send information on HOISTS designed for pit and quarry operations.

Name_____
Company_____
Address_____
City_____ State_____

34

The hoist that delivers in the clutch


WHAT QUARRY MEN SHOULD KNOW ABOUT CLUTCHES
CONE TYPE clutches, operated by lateral pressure, create side thrust on frame of the hoist. Must be held under pressure when engaged, and need spring release mechanism. Adjustment and maintenance relatively difficult. Heat is created internally, and is not readily dissipated.
CONTRACTING BAND clutches on AMERICAN hoists are engaged by external band action. Clutch is self-energizing. One set screw, easily reached, gives instant adjustment. All parts needing maintenance are accessible. Bands reversible for extra wear. Fins quickly dissipate created heat.

When the chips are down, and you have to call on men and machines for "impossible" performance . . . it's a pleasure to own an AMERICAN hoist. In that kind of a situation, you'll notice some amazing differences in the way a hoist can behave. First—you'll notice extra production without a sign of strain. Second—an effortless, precise operation that keeps the operator fresh and rested. Third—your AMERICAN hoist stays cool and quiet while another may be smoking hot, noisy and seeming to labor in every part.

The reasons? There are many . . . but important as any is the AMERICAN hoist *friction clutch*. It's an external, contracting band mechanism. Wonderfully smooth, instantly responsive . . . and always tuned to "concert pitch", because repair and maintenance are simple, quick and easy.

Want to find out how such a hoist fits *your* business? Mail coupon today, for literature telling the story.

American Hoist
and DERRICK COMPANY
St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J. • *Sales Offices:* NEW YORK, PITTSBURGH, CHICAGO

THE WIDE LINE OF AMERICAN HOISTS OFFERS THE RIGHT SIZE; THE RIGHT TYPE, THE RIGHT POWER, FOR ANY JOB

THE TIGER BRAND SPECIALIST SAYS—
"It's not use but abuse
USS
AMERICAN
TIGER BRAND
WIRE ROPE
UNITED STATES STEEL

that determines wire rope life"

check your application

"Everything was wrong on this job. When I arrived the superintendent and the operator were having a terrific argument. The 'Super' claimed that the operator was wearing out wire rope twice as fast as anybody else on the job. The operator blamed the machine. I could see that nobody knew the real source of trouble.

"I offered to give them a complete check-up and they both jumped at the chance. It turned out that they were using cast iron sheaves which were too soft. To make it worse, the wire rope was not preformed and tended to twist and squirm as it passed over the sheaves.

"The rope bit into the sheaves and the sheaves got rough and chewed up the rope.

"That's the story. I recommended harder manganese steel sheaves and Excellay Preformed Wire Rope. With the right rope for the job, they ought to get twice the service."

How proper wire rope application saves you money

There is always *one* best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the *right* ropes for your particular needs. His job is to make sure that the rope is not overloaded. He checks the sheaves for proper size, wear and alignment. He instructs your operators on proper rope care and does a dozen other things to assure long service life at low unit cost for wire rope.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information.

SEND FOR FREE BOOKLET

American Steel & Wire Company
Rockefeller Building, Dept. H-8
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....

Company.....

Position.....

Address.....

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

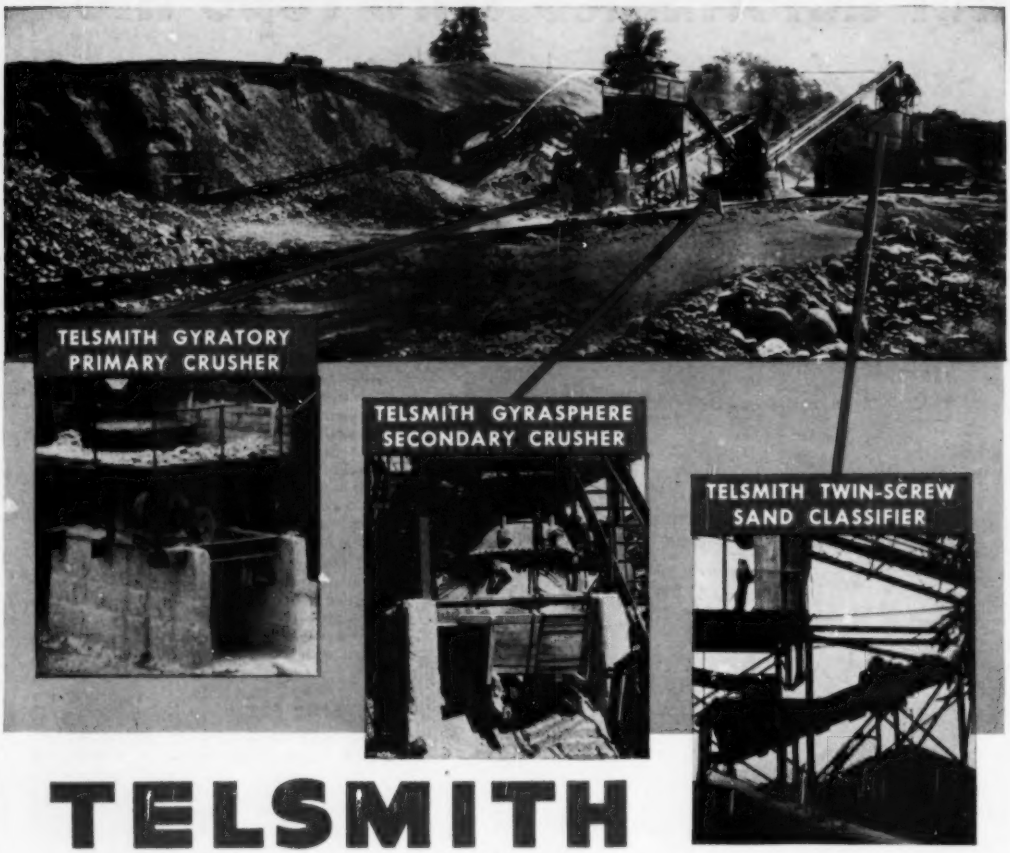
USS

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

Boosting PLANT Capacity with Gyratory Crushers



TELSMITH

THE PALMER CRUSHING CO., SLINGER, WIS.—a top producer in the Milwaukee area—installed Telsmith gyratory crushers to boost plant capacity. A typical glacial moraine deposit with a high percentage of very hard boulders—their pit runs about 65% gravel and 35% sand. A large percentage has to be crushed. The plant, when first built, used a Telsmith 13-B Gyratory as the primary and a double roll crusher as the secondary. Replacing the roll crusher with a Telsmith 36 Standard Gyrasphere Secondary Crusher *upped capacity* 40 to 50%. Now the plant turns out about 225 tons hourly of aggregate, for concrete or for railroad ballast. Two Telsmiths do all the crushing—turn out well-cubed products—and still have plenty of crushing capacity in reserve. A Telsmith Sand Classifier, with 20" x 15' twin screws, recovers all sand. In this plant it was Telsmith Equipment *again* for Mr. Palmer. The reason—Telsmith big capacity and better performance in his two other plants. Get Bulletin G-15.

G-17

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. • 211 W. Wacker Drive Chicago 6, Ill. • 713 Commercial Trust Bldg. Philadelphia 2, Pa. • 238 Main Street Cambridge 42, Mass. • Boebek Eqpt. Co. Milwaukee 3, Wis. • Brandeis Mach. & Supply Co., Inc. Louisville 8, Ky.

Clyde Equipment Co., Portland 9, Ore., & Seattle 4, Wash. • General Machinery Co., Spokane 1, Wash. • Interstate Equipment Co., Statesville, N. C. • Rish Equipment Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

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EATON

2-Speed Trucks

AXLES

To cost-conscious truck operators, Eaton 2-Speed Axles mean faster trips, reduced vehicle operating and maintenance expenses. These advantages are possible because Eaton 2-Speed Axles double the conventional number of gear ratios, thus enabling drivers to use the RIGHT ratio for every operating condition—starting out under full load, climbing grades, high-balling, quick shifting in traffic. As a result, vital truck parts are not overstressed, engines are permitted to run at efficient speeds, cutting gas and oil consumption and minimizing engine wear. Long life for the axle is assured by rugged construction and exclusive Eaton features. Ask your truck dealer to prove that Eaton Axles *more than pay for themselves.*

More Than a Million Eaton 2-Speed Axles in Trucks Today

Axle Division

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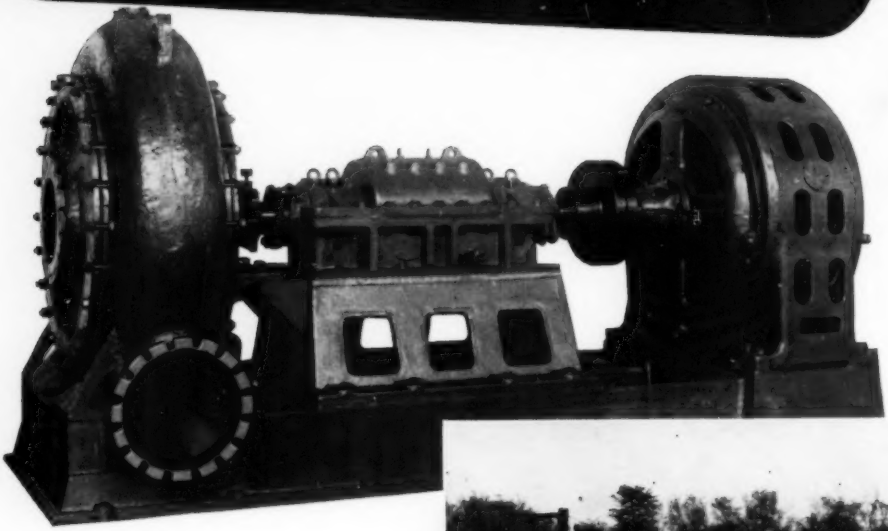
PRODUCTS: POPPET VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • ROTOR PUMPS • MOTOR TRUCK AXLES • PERMANENT MOLD GRAY IRON CASTINGS • HEATER DEFROSTER UNITS • SNAP RINGS • SPRING-TEMPERED SPRING WASHERS • COLD DRAWN STEEL • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, DYNAMOMETERS

700,000 Ton Shell Life....



with an AMSCO DREDGE PUMP

Kershaw Mining Co.'s dredge "Chickasaw" pumping aggregate (45% gravel, 55% sand) on the Illinois River. Amsco type XH 15" pump is used.

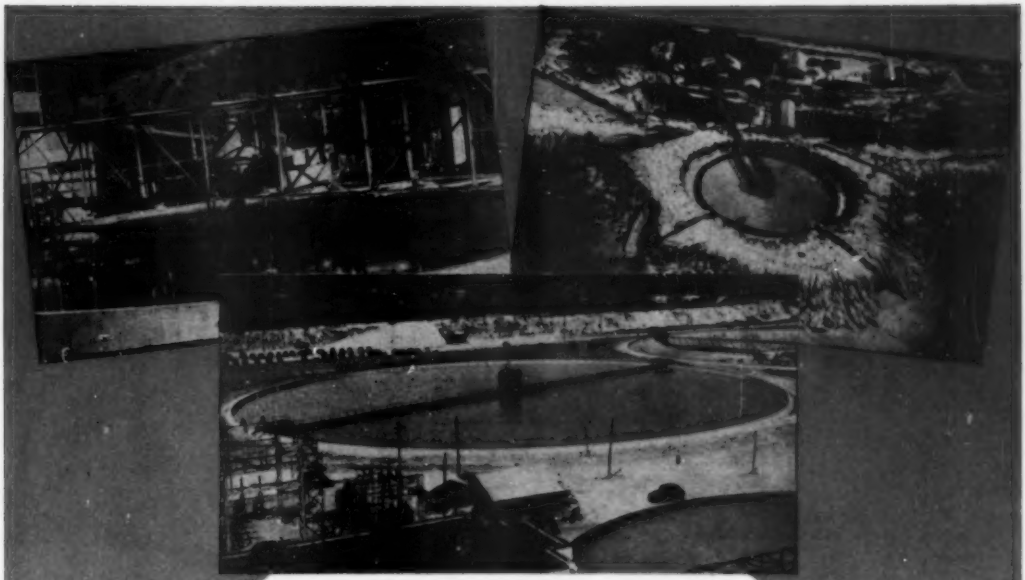
The record of this Amsco Pump is impressive. Built in 1929, it has been in almost constant use ever since . . . and is still giving "excellent service", according to reports from Kershaw Mining Co. For example, the latest replacement was a shell after the pump had handled about 700,000 tons of material through it.

Long life and efficient service are the rule, rather than the exception, with Amsco pumps. Simple, rugged design is one reason. Another is the use of manganese steel castings for the water end . . . for only manganese steel can withstand the shocks of sucked-in boulders combined with the drastic wearing action of sharp sand and gravel. For complete information concerning Amsco dredge pumps, write us.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo. Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.



UP-TO-DATE THICKENERS SAVE YOU MONEY EVERY DAY THEY OPERATE

The completely automatic, practically fool-proof operation of General American thickeners and hydroseparators has set new performance standards.

They prevent shutdowns from overload feeds, underflow pump or power failures.

They will take full feed without prescreening or preclassification.

They may be utilized for storage while operating or started by push button control after a prolonged shutdown.

Check your present operations and let a General American engineer assist you in designing new units or modernizing your existing ones.

OTHER GENERAL AMERICAN EQUIPMENT

Dewaterers
Filters
Thickeners
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Process Equipment Division

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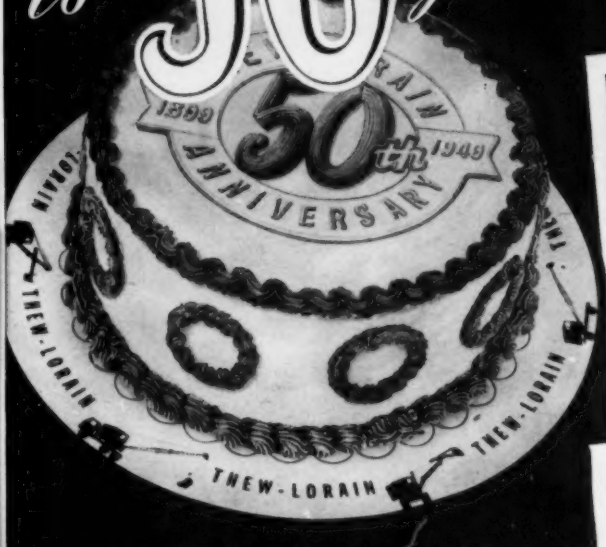
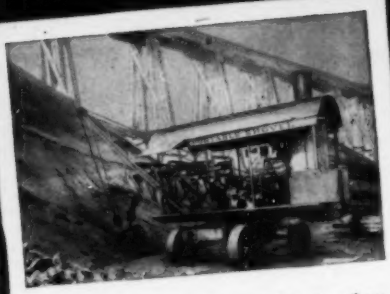
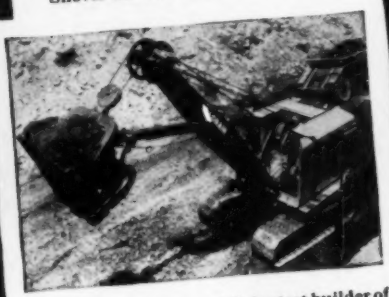
TRADE MARK

THEW-LORAIN *is* 50 *years young!*





1899... First full revolving shovel as designed and built by Captain Richard Thew in 1895. After 4 years of operation as a private business, The Thew Shovel Co. was incorporated in 1899.



TODAY... The world's largest builder of commercial size shovels, cranes, clamshells, draglines and hoes, mounted on crawlers or rubber-tires, is identified by the trademark "Thew-Lorain."

50 years ago — July 17, 1899 — an idea became an industry — an industry still going strong today as The Thew Shovel Co. Thew alone hasn't made this anniversary possible. It's due largely to you and your repeated confidence in Thew-Lorain products. We're old only in our years of experience and "know-how" . . . but young as ever in our ideas and efforts to serve you better, today and tomorrow.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW-LORAIN 1899 50th 1949 ANNIVERSARY

50 YEARS devoted exclusively to the design and manufacture of Power Shovels & Cranes.

THEW Lorain

CRACK DOWN ON COSTS

Profitable standardization! A "Caterpillar" D8 Tractor with No. 8S 'Dozer and No. 25 Cable Control pushes material to a "Caterpillar" Diesel D17000 Engine-powered Cedar Rapids Rock Crusher. Operation of Peter Kiewit Sons Co.

with STANDARDIZED EQUIPMENT!

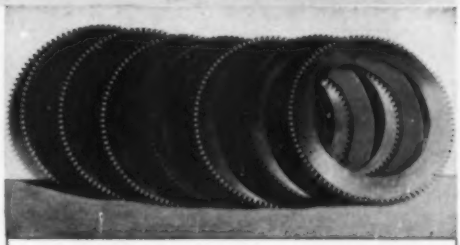
ONE THING is for sure. To economize, standardize with equipment that's proved itself a money-maker. That describes "Caterpillar" across the board. Every piece is engineered to do its particular job best, as well as stand up under brutal punishment.

Take this "Caterpillar" unit, for instance—a D8 Tractor with No. 8S 'Dozer and No. 25 Cable Control. Fast reverse lever and constant mesh transmission make it a "trigger-fast" giant. Visibility is 20/20. Special high-tensile steels put long life in the blade. Tip and tilt adjustments are a matter of seconds for one man. And the Cable Control, with exclusive multiple-disc clutches, is a miracle of efficiency.

Whether it's a "Caterpillar" Diesel Tractor, Engine, Motor Grader, Scraper or 'Dozer, you can expect superior performance from it. And you can expect stand-out service from your nearby "Caterpillar" dealer. Get the dope on "Cutting Quarry Costs" from him. Or send for the booklet.

CATERPILLAR TRACTOR CO. · PEORIA, ILLINOIS

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL ENGINES · TRACTORS · MOTOR GRADERS
EARTHMOVING EQUIPMENT



Exclusive multiple-disc clutches on "Caterpillar" No. 25 Cable Control mean long use periods between adjustments and add money-saving minutes to the working day. There are 732 sq. in. of friction surface per clutch.

CATERPILLAR TRACTOR CO.
Box PQ-7, Peoria, Illinois

Send me, without obligation, "Cutting Quarry Costs."

NAME_____

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THE BEMIS MAN IS CLOSE AT HAND

. . . TO GIVE YOU THE BEST IN MULTIWALL SERVICE

When you can't estimate your future Multiwall needs right on the button, it's handy to have a supplier near for prompt service.

With the facilities of seven Bemis Multiwall plants available through thirty-six sales offices across the country, you are in a much better position to keep your multiwall supply in line with your needs.

Bemis

COTTON · BURLAP · PAPER BAGS · ESTABLISHED 1858 · BEMIS BRO BAG COMPANY

"America's No. 1 Bag Maker"

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IN UNDER-WATER PITS

HENDRIX MEANS *Maximum* BUCKET LOADS for MORE PROFITS

COMPARE THESE FEATURES

- ★ **FULL BUCKET EVERY TRIP; EVEN IN WET DIGGING.**
- ★ **All welded construction for greater strength and durability. Less maintenance cost.**
- ★ **20% to 40% lighter than other buckets, type for type.**
- ★ **Perfect Balance; handles easier, fills faster, dumps cleaner.**
- ★ **12% Manganese Steel chains, fittings, and reversible tooth points.**
- ★ **Three Types: Light, Medium, and Heavy-duty. ⅜ to 40 Cubic Yards. With or without perforations.**

Every yard of material you can dig from a watery pit means a quicker profit on your operations. You can get this extra yardage by using a Hendrix Bucket. Its scientifically arranged perforations make it a "natural" for wet digging . . . lets water go through . . . leaves more room on the inside for paydirt.

A full bucket every time . . . and a minimum of maintenance cost, both in dollars spent and in time consumed, will result in more profitable operations for you. Ask the man who uses a Hendrix . . . he knows!

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

For descriptive literature ask your dealer or write

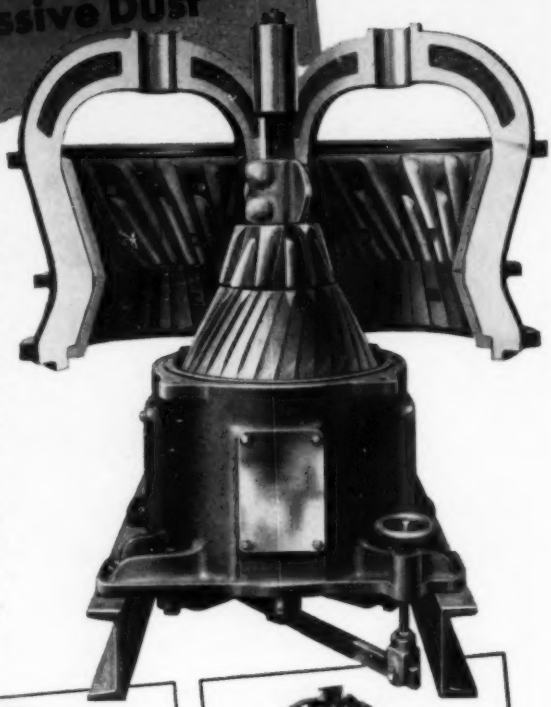
HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

STURTEVANT

Rotary Fine Crushers

Provide Granular Products Without Excessive Dust



These fast, highly efficient crushers are designed to crush or granulate soft and moderately hard substances to fine even sizes without large amount of dust. They effectively handle materials up to and including the hardness of the softer limestone or cement clinker. The fineness of product is regulated by a hand-wheel. They produce a dependable quality of output from one inch to a quarter inch. Capacity ranges are available from one to 30 tons per hour depending on size of machine. Open door accessibility allows entire crushing area to be exposed for quick, easy cleaning. Write for information.

JAW CRUSHERS

for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.

RING-ROLL MILLS

for medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open door accessibility. No scrapers, plows, pushers, or shields.

CRUSHING ROLLS

for granulation, coarse or fine, hard or soft materials. Precision and automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8x5 to 38x20. Roller or Plain bearings. The standard for abrasives.

STURTEVANT MILL COMPANY

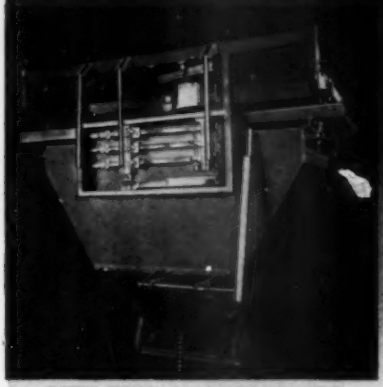
104 Clayton Street, Boston 22, Mass.

Designers and Manufacturers of

CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • ELEVATORS • LABORATORY EQUIPMENT • MECHANICAL DENS AND EXCAVATORS • MIXERS

Let's Have Your

SAND, STONE and CEMENT STORAGE and BATCHING PROBLEMS



ERIE'S AggreMeter Line, backed by over a quarter century of application experience, is at your service. From the smaller GA Portable AggreMeters to the largest of central plants that combine Aggregate and Bulk Cement handling, Erie is prepared to meet your needs. May we direct you to some Erie AggreMeter installation near you, or let's have your immediate problem for recommendations. We list standard plants, left below. Write for bulletins.

NEW BWC AGGREMETERS

ERIE presents this new sturdy all-welded, easy operating line of weighing AggreMeters. They feature new type scale suspension with few parts. Erie's distinctive discharge method is well known for fast charging service. Type BWC units are available in 1 1/2, 2, 3, 4, and 5 cu. yard sizes.

OTHER ERIE AGGREMETERS

TYPE GA
Portable Plants
36, 52, and 68 cu. yard sizes

TYPE CAB
3-Compartment
74, 88, 107, 129, 150, and 211 cu. yard sizes

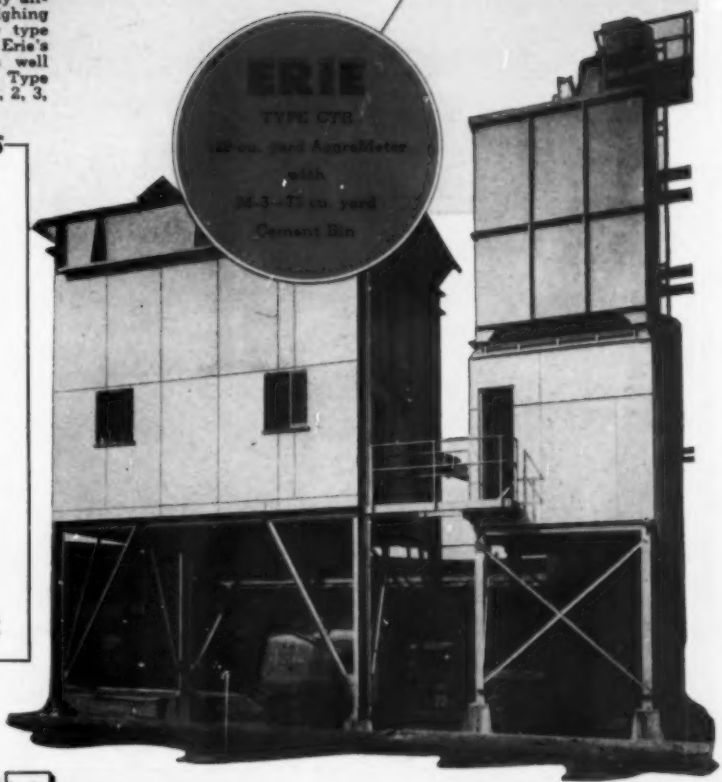
TYPE CTB
Like Type CAB
Only with Long Columns

TYPE CTE
4-Compartment-in-Line
145, 160, and 200 cu. yard sizes

TYPE CTC
Like Type CTE
Only with Long Columns

TYPE M
Portable Cement Bins
Single Compartment
29, 45, and 73 cu. yard sizes

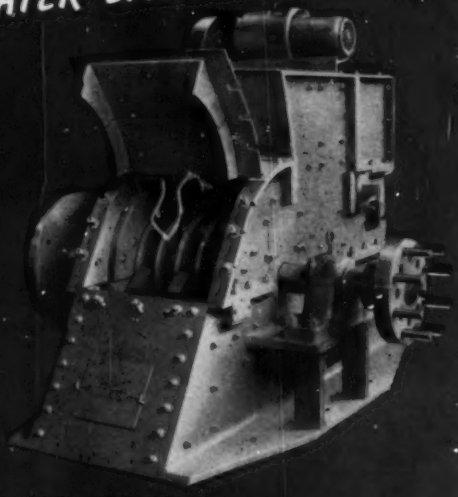
TYPE L
Single and Double Compartment
90, 112, and 148 cu. yard capacity



ERIE
STEEL CONSTRUCTION COMPANY
697 GEIST ROAD • ERIE, PENNSYLVANIA

MUD HOG CRUSHER

CRUSHES with GREATER EFFICIENCY



WET -- STICKY MATERIAL

(LIKE CLAY, SHALE, ORES, CEMENT ROCK, ETC.)

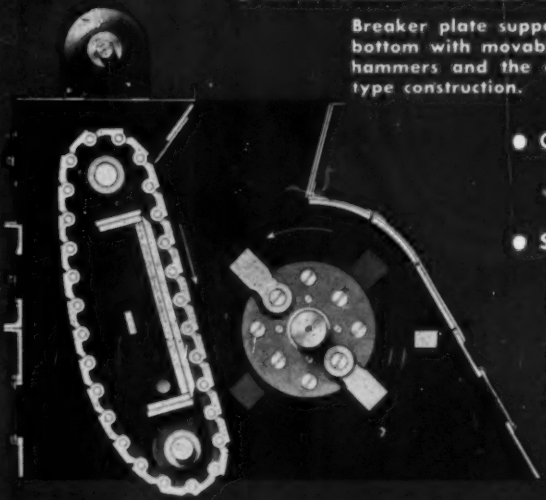
that plugs or builds up in other types of crushers.

● **CONVEYOR-TYPE BREAKER PLATE** (see drawing)

Actually conveys stickiest material into path of heavy steel hammers, which crushes and sweeps breaker plate clean for next revolution . . . gear driven with separate motor . . . rugged construction.

● **ADJUSTABLE FOR SIZE OF PRODUCT**

Breaker plate supported at top by fixed drive shaft . . . at bottom with movable shaft for adjusting clearance between hammers and the crushing surface backed by heavy anvil type construction.



● **CAPACITY** — 40 to 350 tons per hour . . . depending upon product desired and crusher size.

● **STREAMLINED** — crusher frames of heavy plate steel . . . back frame flared for large discharge area . . . renewable liners throughout.

Larger sizes of the MUD HOG Crusher (reversible type) have two continuous-moving breaker plates . . . each adjustable for a different size of product.

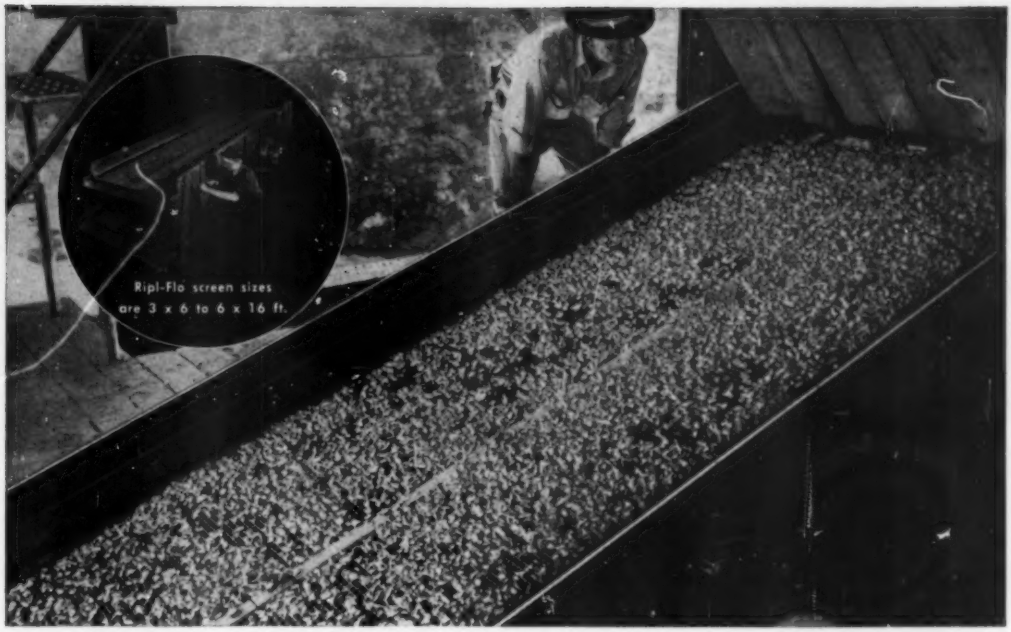
Bulletin No. 811

THE JEFFREY MANUFACTURING COMPANY

ESTABLISHED 1877

917 North Fourth St., Columbus 16, Ohio

Complete Line of Material Handling, Processing and Mining Equipment



Screens 150–200 TPH, 10 Hours a Day for 7 Years

CAMPBELL LIMESTONE CO., Liberty, S. C. is mighty pleased with this 5 by 14 ft double deck *Ripl-Flo* vibrating screen installed for sizing granite, one of 8 *Ripl-Flo* screens installed here.

And no wonder! It's been on the job 10 hours a day for seven years, handling 150 tons per hour — sometimes as high as 200 TPH. Maintenance has been extremely low; sizing efficiency has been extremely good.

This case is *typical* of how *Ripl-Flo* screens have paid off for hundreds of stone plant operators — in long, dependable service . . . in reduced downtime . . . in *profitable* performance!

CHECK IMPORTANT FEATURES

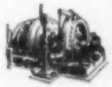
Ripl-Flo's smooth, circular motion to every point on screen surface gives you rapid stratification with no "dead spots" anywhere on screen.

Allis-Chalmers' method of providing adequate, uniform support for the screen surface increases cloth life. Convenient clamping plates make it easy to change cloth surfaces. *Ripl-Flo* screens are built with only two bearings to lubricate instead of four. Less weight; less width — lower power costs; lower maintenance expenses. Simplified design makes possible lower first cost, too!

The A-C representative in your area can show you how *Ripl-Flo* screens may help you save big money on your job. Call him today, or write for *Ripl-Flo* screen Bulletin 07B6151B. Allis-Chalmers offices or distributors in principal cities in the U. S. A. and throughout the world. A-2654

Kilns, Coolers, Dryers

Jaw Crushers


Hoists

Mills

Gyratory Crushers

Vibrating Screens

AND OTHER EQUIPMENT FOR THE CRUSHING, CEMENT AND MINING INDUSTRIES

ALLIS-CHALMERS, 974A SO. 70 ST.
MILWAUKEE, WIS.

Ripl-Flo is an Allis-Chalmers trademark.

ALLIS-CHALMERS

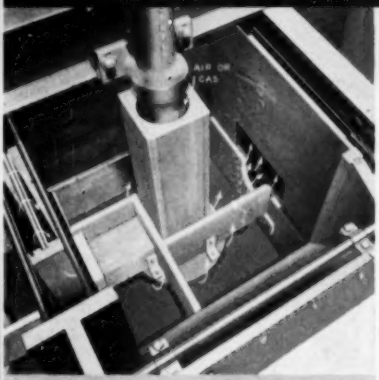
Use DENVER "Sub-A" (ACID TYPE) Flotation Machines

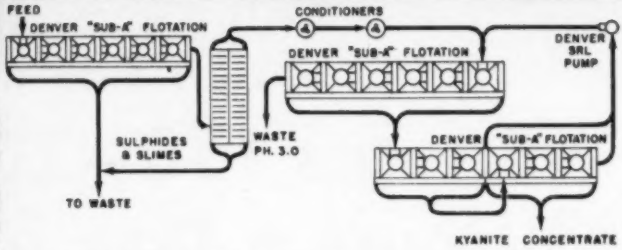
for treating:

Silica Sand
Feldspar
Mica
Kyanite
Sillimanite

and other

Non-metallics





Denver "Sub-A's" treat highly acid kyanite pulp at Commercialores, Inc., Clover, South Carolina

Read this complete story in July 1949 Pit and Quarry.

Following fine grinding in a 4' x 10' Denver Rod Mill, a 6-cell No. 15 Denver "Sub-A" Flotation Machine removes FES_2. Tailings (containing the kyanite) of this pyrite circuit are deslimed and conditioned before going to the first 6-cell No. 18 (28 x 28) Denver "Sub-A" (Acid Type) Flotation Machine which produces a rougher concentrate from this highly acid pulp (pH. 3.0). The first three cells of second bank operate as a primary cleaner while the last three make a finished kyanite concentrate. No pumps are used in this cleaning and recleaning operation which utilizes the Denver gravity flow principle.

Flexibility of these machines makes it possible to feed from any quadrant or to remove tailings from any cell. Rubber-molded-to-metal wearing parts give greatest protection against abrasive and corrosive pulps. These factors are important in any flotation circuit.

If you have a Flotation Problem, write for Bulletin No. F10-B29.

Check these features:

- **Wood construction to handle acid pulp.**
- **Corrosion resistant fittings.**
- **Molded rubber wearing parts for abrasion and corrosion resistance.**
- **Flexibility permits feeding or tailing removal in any cell.**
- **Gravity return of concentrate for recleaning makes fewer pumps necessary.**

"The firm that makes its friends happier, healthier and wealthier"

DENVER EQUIPMENT COMPANY
1408 17TH STREET • DENVER 17, COLORADO

DENVER • NEW YORK CITY • CHICAGO • TORONTO • VANCOUVER • MEXICO CITY • LONDON • JOHANNESBURG • RICHMOND, AUSTRALIA

This Belt Takes a Terrific Beating

Manhattan Conveyor Belts are Built to Take It

This 30" Manhattan Conveyor Belt is handling hot filtered cement. Slurry conveyors such as this are notoriously tough on belts, but this Manhattan installation in an Oklahoma cement plant is paying for itself over and over.

Manhattan engineers are "Belting Pioneers" when it comes to designing conveyor belts for special duty.

HOMOCORD — Special Cushioned Construction . . . Only for Conveyor Belt Use

In Homocord Conveyor Belt, Manhattan engineers devised a Strength Member that gives with the shocks of loading and dissipates hard blows. It has been called a "Rippling Muscles Construction' because the Homocords have a flexible, resilient, rolling action with each other. Homocord Conveyor Belt is Cushioned, Tough, Flexible and Mildew-Proof, also holds metal fasteners.

RAY-MAN — for Extra Long Lifts

Another Manhattan "First", built with Rayon Cord Strength Members. A "Tension Master" construction for longer lifts where you want to eliminate troublesome transfer points.

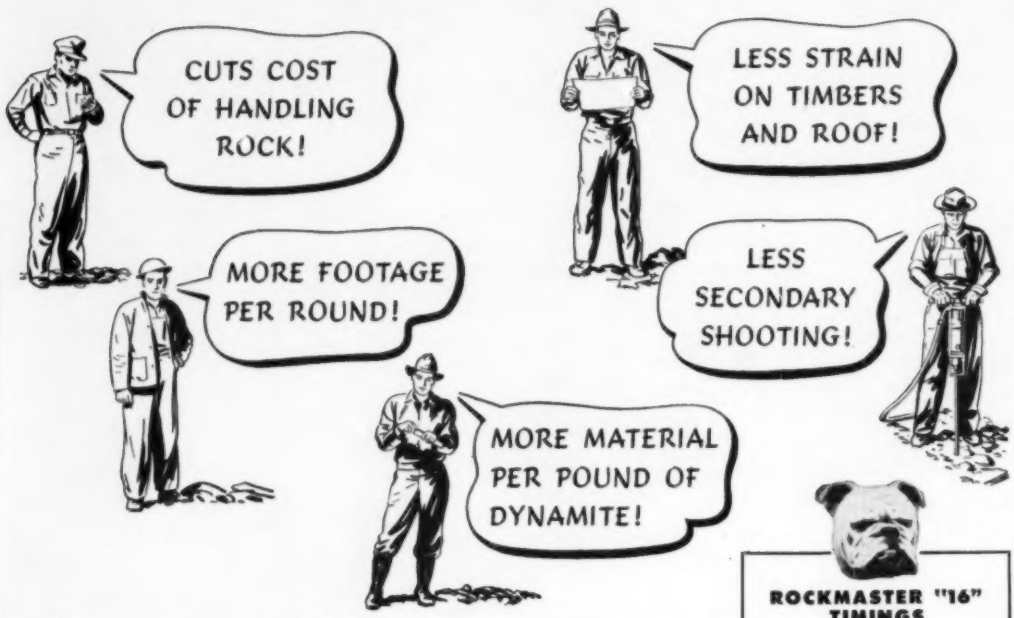
Whatever your conveyor belt needs, call a Manhattan Conveyor Belt Engineer to advise you on possible ways to lower your stone and aggregate handling costs.

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Manufacturers of Mechanical Rubber Products • Rubber Covered Equipment • Radiator Hose • Fan Belts • Brake Linings • Brake Blocks • Clutch Facings • Packings • Asbestos Textiles • Powdered Metal Products • Abrasive & Diamond Wheels • Bowling Balls

What Does the *NEW*
ROCKMASTER "16" Blasting System
Do for *YOU*?


CUTS COST OF HANDLING ROCK!
LESS STRAIN ON TIMBERS AND ROOF!
MORE FOOTAGE PER ROUND!
LESS SECONDARY SHOOTING!
MORE MATERIAL PER POUND OF DYNAMITE!

THE ROCKMASTER 16 blasting system is the greatest improvement in blasting methods since Atlas introduced ROCKMASTER—the first millisecond delay blasting system! Skilled blasting men have agreed on that point. They can now shoot multi-hole blasts with 17 *different* ROCKMASTER electric detonators, all firing in a fraction over one-half second! No complicated wiring. No complex machine to buy.

Naturally this means better control over breakage than was ever possible before . . . better control over throw, too . . . and over noise and vibration.

Underground, the new ROCKMASTER system provides sufficient delays for complex large rounds. The blaster gets all the advantages of ROCKMASTER'S superior breakage control—*plus* greater safety because of less vibration—less dust—more footage per round.

Get the full story from your Atlas representative. Ask for new booklet explaining the *why*, *wherefore* and *how* of ROCKMASTER.

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

REDUCE DOWNTIME

... *with THERMALLOY*

Feed Ends and Feed Pipes

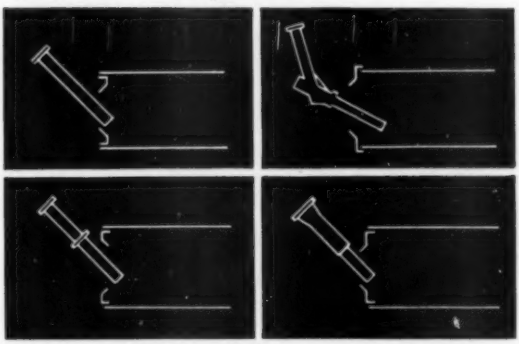
THERMALLOY is tough! It stands up under rough treatment ... resists high temperatures, corrosive gases and abrasives. Thermalloy Feed Ends have lasted up to *10 times as long* as "bricked-up" ends ... thereby materially reducing down-time and replacement costs. That's why many kiln operators are switching to THERMALLOY feed ends and feed pipes.

No special "built-up" brick feed end is necessary on your kiln with THERMALLOY end rings. The segmental design is adaptable to a variety of different kiln sizes and prevents cracking due to expansion and contraction. Shell distortion is eliminated, without shortening the effective working length of your kiln.

THERMALLOY feed pipes also play an important part in economical kiln operation. Their ability to resist abrasive wear and withstand elevated temperatures without scaling or cracking has been proved in hundreds of calcining installations.

Other THERMALLOY kiln parts include burner nozzles, cooler parts, drag chain, outlet grates, discharge ends, clinker chutes. For full information, call your nearest Electro-Alloys engineer or write Electro-Alloys Division, 2002 Taylor Street, Elyria, Ohio.

Easy to install



Drawings above show several different ways in which Thermalloy feed ends and feed pipes can be adapted to your kiln.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

Nine Years on the Job... Crushing Tough Trap Rock

INSTALLED IN 1940 by Bird and Sons, E. Walpole, Mass., this *Type R* gyratory crusher has been in operation 24 hours most days reducing hard, abrasive trap rock for roofing granules.

Trap rock is tough on crushers. Yet, so little "time out" for maintenance has been required since this machine was installed that these owners say it does a remarkable job for this kind of work.

In the modern *Type R* crusher, Allis-Chalmers has achieved both maximum strength and the elimination of excessive weight. It's built of sturdy steel construction with wearing parts made of heat-treated manganese steel. Fully automatic flood-lubrication of moving parts contribute to long operating life. Resilient mountings protect crusher and building from destructive vibration.

Type R crusher gives you maximum crushing capacity. That's due to the scientifically shaped crushing chamber... which also results in a more cubical product.

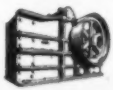
MAINTAINS EXACT PRODUCT SIZE

It's a topnotcher in operating convenience, too. "Speed-Set" control of crusher setting permits adjustment to exacting product size with turn of hand crank . . . *easily*, without stopping crusher!

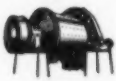
Automatic Reset lowers the entire crushing head hydraulically to pass tramp iron and other uncrushable materials.. then brings it back to previous setting smoothly and without shock.

Find out more about *Type R* crusher's cost-cutting advantages from the A-C representative in your area, or write for **Bulletin 07B6006E.** A-C offices or distributors in principal cities in the U.S. and throughout the world.

Kilns, Coolers, Dryers


Jaw Crushers

Hoists


Mills

Gyratory Crushers

Vibrating Screens

AND OTHER EQUIPMENT FOR THE CRUSHING, CEMENT AND MINING INDUSTRIES

ALLIS-CHALMERS, 974A SO. 70 ST.
MILWAUKEE, WIS.

A2653

Speed-Set is an Allis-Chalmers trademark

ALLIS-CHALMERS

TRUCKS and SHOVELS keep on the *move*

when you detonate with PRIMACORD

You can figure on better digging when you shoot with Primacord. *Operations speed up all along the line.*

Primacord does this with a combination of forces that team up to give you more complete fragmentation. Down-hole lines initiate the whole charge instantly, from top to bottom, with all the power of primer cartridges. Main lines can be laid out so that front holes go a split second before succeeding ones, allowing for planned relief of burden.

You can get Primacord, wound on easy-to-handle spools, in a grade to meet every blasting condition. It's insensitive to stray currents, and hooks up as fast as you can tie square knots or half hitches. Ask your supplier about Primacord, or write direct to The Ensign-Bickford Company, Simsbury, Connecticut. P-23

PRIMACORD-BICKFORD Detonating • Fuse •

Also Ensign-Bickford Safety Fuse Since 1836

40% More Horsepower per belt!

WITH

PREMIUM

DAYTON COG-BELTS®

BUILT TO BEND! That's why Premium Dayton Cog-Belts deliver 40% *more* horsepower per belt. The patented, exclusive, built-in Cog makes the belt fit pulley grooves perfectly, without strain or distortion. The belt grips tighter, delivers smooth, positive power.

Compare it to your finger and you'll see why. Notice how the flesh on the top of your finger is made to "give". Dayton Cog-Belts do the same thing. The top or Tension Section is made with bias-cut fabric. It "gives" when it bends.

Now crook your finger. See how it closes up, takes up the "compression". The Cogs do the same thing. When they bend around the pulley, they close up, take up the compression, eliminate distortion, deliver 40% more power.

And like the bone of your finger—tough, strong, Raytex Fortified Cords are bonded in the Neutral Section. Give Dayton Cog-Belts amazing flex strength, minimum stretch, longer life.

For more horsepower with fewer belts, for cooler running, longer lasting drives, replace with Dayton Cog-Belts.

For shortest centers, smallest pulley diameters, no other belt even approaches the Dayton Cog-Belt.

Available in all sizes and cross sections. Order from your local Dayton Jobber. *The Dayton Rubber Co., Dayton 1, Ohio.*

THE FINEST V-BELT MADE

GREATER GRIPPING POWER
Die-cut construction gives maximum coefficient of friction in pulley grooves.

LESS PULLEY WEIGHT
Fewer belts deliver more horsepower. Permit use of narrower pulleys.

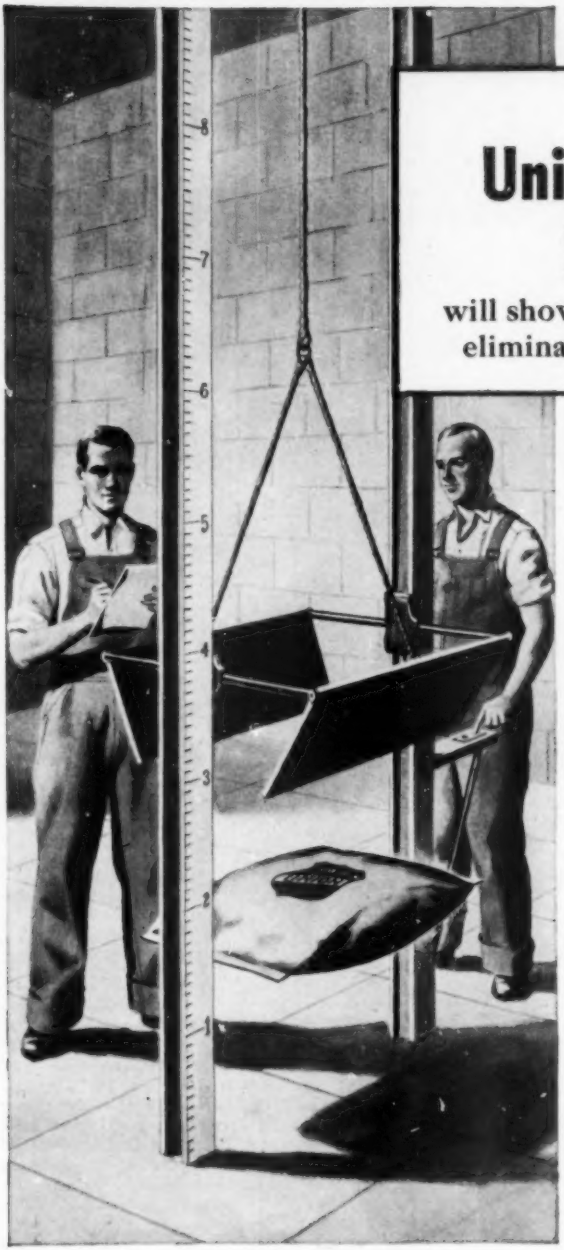
OIL AND HEAT RESISTANT
Made with special compounds to resist deteriorating effects of oil and heat.

COOLER RUNNING, LONGER LIFE
Heat of flexing is dissipated in space between Cogs. Basic design permits maximum air circulation—results in cooler running, longer life.

LESS MAINTENANCE
Assured through minimum slippage, reduced strain on bearings, and attention-free performance.

Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER



Your

Union Multiwall Specialist

will show you how quality control eliminates customer complaints!

SHIPPERS of more than 300 different products find Union Multiwall Bags reduce customer complaints and losses in shipping and handling. They are custom-designed with reserve strength for hard knocks.

Continuous testing in Union laboratories leaves nothing to chance. Bag paper is tortured and torn, burst and frayed. Loaded bags are dropped and tumbled and scuffed to discover any weak points, any need for strengthening.

Union Quality Control checks and rechecks every step in the making from timber to finished bag.

This constant checking and testing is a safeguard for every order of Union Multiwall Bags. So when your Union Multiwall representative calls on you, tell him the requirements of your product, its shipping and handling. You can be sure your delivered bags will live up to specifications.

Even if you are now using multiwall bags, your Union representative can give you new ideas on bag construction, packaging and handling that will save you money. So welcome him when he calls!

Multiple Protection

Opens Easily

Prevents Siftage

Empties Clean

UNION Multiwall Bags

UNION BAG & PAPER CORPORATION

233 BROADWAY, NEW YORK 7, NEW YORK

Offices in: CHICAGO, ILL. • MINNEAPOLIS, MINN. • KANSAS CITY, MO. • HOUSTON, TEXAS

JOY

ONE-MAN LIGHTWEIGHT WAGON DRILL

FASTER DRILLING

EASE OF HANDLING

LOW MAINTENANCE

You'll get *more hole* per shift, at lower costs, with the *exclusive* "drill and blow" feature of the JOY Lightweight Wagon Drill. And it's really lightweight—only 750 lbs.—easily operated by one man. Mounts JOY 55 or 65-pound sinkers, and 3" or 3½" drifters, as needed . . . requires no spikes due to the positive locked brakes. JOY pioneered the Lightweight eight years ago—more than 500 now in operation. It can save you time and money—*write for bulletin.*

Above, drilling toe-holes—no need to stop drilling to blow. Piston speed and blow automatically adjusted to give fast, consistent and economical drilling in every kind of formation—especially in overburden, clay seams and other material that varies from hard to soft.

Consult a Joy Engineer

W&D C 2011

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

NEW Thor SINKER LEG

45% MORE FOOTAGE AT FAR LESS COST!

Here's real savings in labor . . . man hours . . . and drilling costs . . . and 45% more drilling footage by actual tests!

The miner can carry the entire setup—Thor Sinker and Thor Leg—into the smallest tunnel or closest corner, set it up in an instant, start the hole . . . and then let Thor do the work! All he does is control the *constant pressure* feed by operating two simple throttles—*the only automatic controls in leg operation!*

Think of the savings . . . both in operating costs and air consumption. With carbide bits the Thor Leg can replace drifters—and heavy mountings on scores of heavy duty operations . . . can drift in tunnels where drifters won't fit. Write today for catalog data.

FULLY AUTOMATIC—A quick, easy setup—just start the hole—set the leg at any angle between 30 and 45 degrees. . .the leg does all the lifting—all the constant pressure feeding . . . control the feed with a turn of the wrist!

INDEPENDENT PNEUMATIC TOOL COMPANY

AURORA, ILLINOIS

Export Division: 330 West 42nd Street, New York 18, N.Y.

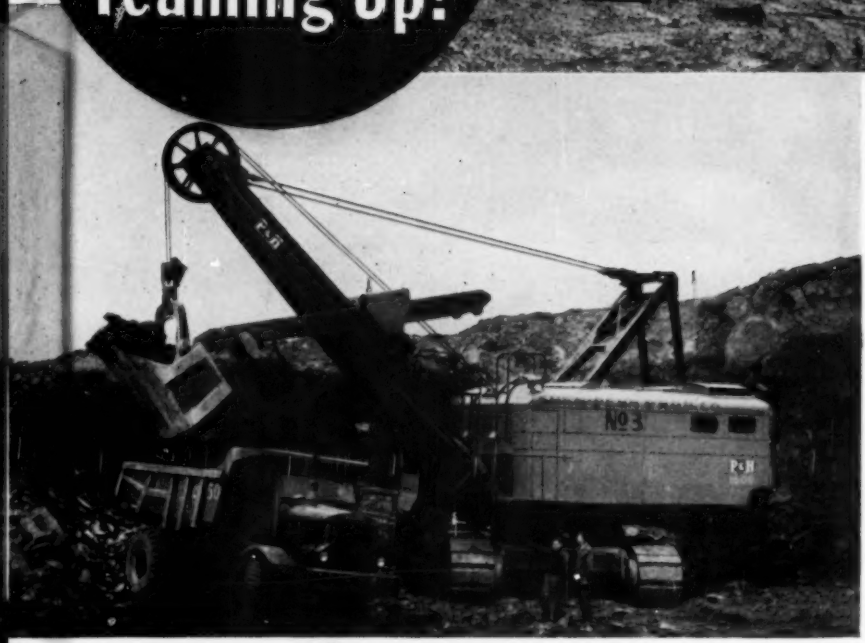
Birmingham · Boston · Buffalo · Chicago · Cincinnati · Cleveland · Denver
Detroit · Houston · Los Angeles · Milwaukee · New York · Philadelphia
Pittsburgh · St. Louis · St. Paul · Salt Lake City · Seattle
San Francisco · Toronto, Canada · Sao Paulo, Brazil · London, England

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

the P&H's are Teaming Up!

P&H Model 1400 (4 cu. yds.) owned by the Shen-Penn Production Company at Shenandoah, Pa.



A new P&H 1600 (6 cu. yds.) teams up at Shen-Penn in the strip mining of anthracite coal.

In one location after another owners are reordering P&H Electric Shovels to gain important new operating advantages... For example: P&H's independent propel drive. Change from dig to propel is made instantly by merely flicking the master propel switch . . . there are no mechanical complications of transferring of power from one shovel function to another . . . no sliding gears or mechanical clutches . . . no gear shifting. Faster, easier move-ups with P&H's independent propel machinery mean less trouble, less time wasted. The machine keeps in more efficient digging position . . . cuts tonnage costs. Along with Magnetorque drive, it's another important P&H *added value*.

Every third P&H Electric Shovel sold is a repeat order

P&H

ELECTRIC SHOVELS

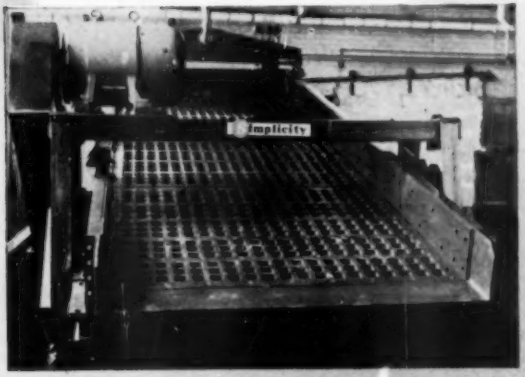
4451 West National Ave.
Milwaukee 14, Wis.

HARNISCHFEGER CORPORATION

LEADING THE FIELD IN ELECTRIC SHOVEL DEVELOPMENTS

THE BIGGEST 5′ x 14′ SCREEN I ever saw

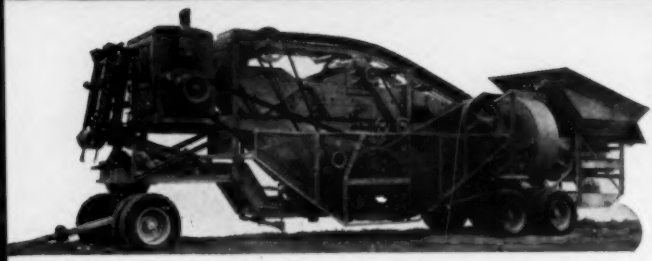
This comment from the president of a large coal mining organization sums up the extra production capacity of every Simplicity unit. He had ordered two 5′ x 14′ Simplicity Gyrating Screens and installed them alongside competitive units that were advertised as 6′ x 14′ size. The fact that the Simplicity Screens were considerably larger than the competitive unit prompted his statement. Advertised sizes of Simplicity Screens are actual screen sizes—not over-all unit sizes. Just another illustration of Simplicity value—delivering exactly, and oftentimes, more than is claimed for it. Our Engineers will gladly study your plans, and suggest Simplicity Gyrating Screens that may speed-up and simplify sizing and cleaning operations in your plant.



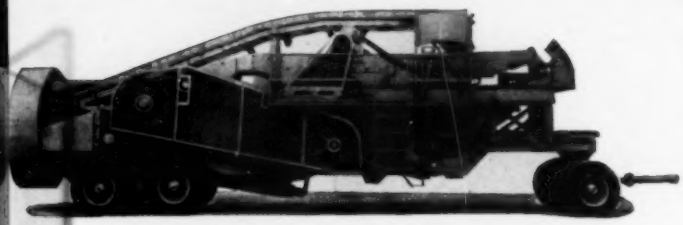
FOR CANADA:
CANADIAN BRIDGE
ENGINEERING CO., LTD.
WALKERVILLE, ONTARIO

Simplicity
TRADE MARK REGISTERED
ENGINEERING COMPANY — DUNKIRK, MICHIGAN

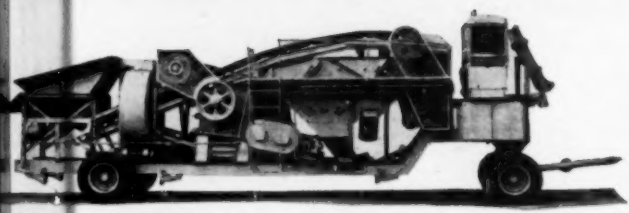
Here's a complete line of portable plants that will meet your every requirement



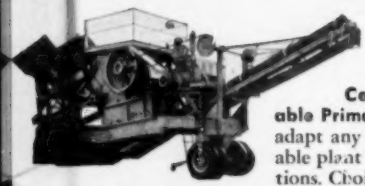
The Cedarapids Junior Tandem is one of the most popular portable crushing and screening plants because it will handle most aggregate producing jobs. The 36″ x 10′ horizontal vibrating screen assures greater capacity and the higher efficiency and closer grading needed for meeting the most exacting specifications. 10″ x 24″ or 10″ x 36″ roller bearing jaw crusher and 24″ x 16″ roller bearing roll crusher provide plenty of capacity for jobs requiring an unusually high percentage of crushing. Operators report production of 110 tons per hour—and more—crushing to ⅜″ with 75% crushing.



The Cedarapids Master Tandem is the ideal big portable plant for big jobs. It contains all the features that mean big capacity, trouble-free operation and low cost. 10″ x 36″ roller bearing jaw crusher, 40″ x 22″ roller bearing roll crusher and 4′ x 12′ horizontal, double deck vibrating screen assure smooth crushing and screening operations for every pit condition. V-belt and universal drives eliminate troublesome chains and sprockets. No lost time for setting up and taking down between jobs. Production of 150 tons an hour is easy for a Master Tandem.



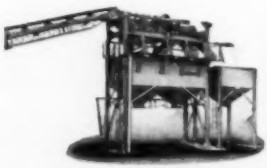
The Cedarapids Pitmaster is the smallest portable tandem plant in the Iowa line. Every feature is designed and built for low operating and maintenance costs as well as exceptionally low first cost. 10″ x 16″ roller bearing jaw crusher, 16″ x 16″ roller bearing roll crusher, 30″ x 9′5″ horizontal double deck vibrating screen assure production of more than 50 tons per hour under average conditions.



Cedarapids Portable Primary Crushers will adapt any Cedarapids portable plant for quarry operations. Choice of five sizes of single jaw crushers from 15″ x 24″ to 32″ x 40″ and an 18″ x 36″ twin jaw crusher.

Cedarapids Secondary Units are similar to the portable tandem plants but use only one crusher, either a roll, cone, twin jaw or hammermill. Choice of sizes to fit your requirements. Units with any of the first three types of crushers are complete gravel plants but when used with primary or scalping unit will handle crushed stone too. The hammermill secondary will produce agricultural lime or roadstone or a percentage of both.

Cedarapids Scalping Units consist of a single jaw or twin jaw crusher, horizontal, double-deck vibrating screen with conveyors, all mounted on pneumatic tired trucks. May be used for primary crushing when oversize is not too large, or to follow a portable primary in a quarry. Choice of five sizes.



Cedarapids Wet or Dry Screening Units are made up of a two-compartment, welded steel bin with a Cedarapids horizontal double-deck vibrating screen mounted on top. Spray bars can be added for washed aggregate. Choice of 40, 50 or 60 cu. yd. sizes.

Cedarapids

Built by IOWA

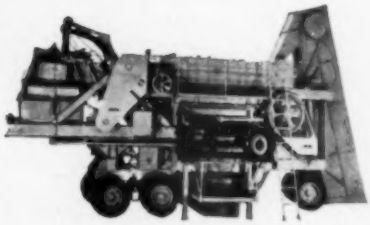
The IOWA LINE of Material Handling Equipment Includes:

ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • STRAIGHT LINE ROCK AND GRAVEL PLANTS • FEEDERS—TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STOCK PILERS • PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE ASPHALT PLANTS • HAMMERMILLS • DRAG SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL TRUCKS AND TRAILERS • DUST IMPACT SEPARATORS • See Your Cedarapids Distributor for Full Details

for current construction

Left

Cedarapids Model "E", all-electric, batch type bituminous mixing plant is completely portable and yet will handle 2000, 3000 or 4000 lbs. per batch. Will handle hot or cold mixes. Also offered in 2000, 3000 and 4000-lb. capacities with gasoline or diesel power and with or without wheel equipment.



Right

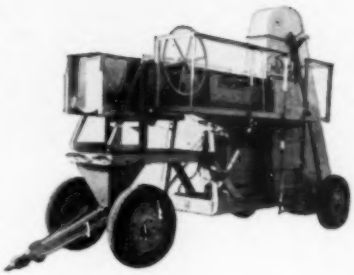
Cedarapids Model "FA" is a super-portable batch-type bituminous mixing plant that you can take to widely scattered jobs and set it up for operation in a very few hours. 25 cu. ft. per batch assures big capacity. Pug mill discharges directly into truck. Finger-tip pneumatic controls on ground level operator's platform. Gasoline, diesel or electric power.

Above

The Cedarapids Model "A" is a knock-down type, 1000-lb. batch bituminous mixing plant built to handle medium sized black top jobs at a profit. 2′ x 6′ Cedarapids-Symons screen, 1000-lb. capacity pug mill, 4′ x 16′ drier, batcher and elevators are perfectly balanced to make a smooth, reliable plant.

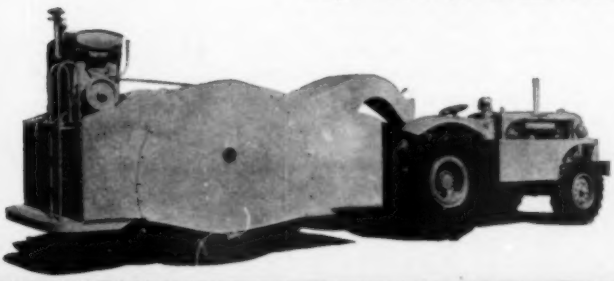
Right

The Cedarapids Patchmaster is the handiest, most portable, low-cost volumetric measuring type bituminous mixing plant for small or medium sized jobs requiring 25 to 30 tons per hour. Ground-level charging hopper and truck-high pug mill discharge simplify operation. May be set up as permanent plant or kept on wheels for easy portability.



Right

The Cedarapids Master Mixer is a two unit, continuous mix type bituminous mixing plant with a capacity of 100 to 150 tons per hour. Mixing unit consists of single shaft pug mill, bitumen pump, elevator and power unit. Gradation unit has 42″ x 10′ Cedarapids-Symons screen, three compartment bin, feeder and elevator.



Left

The Cedarapids Compactor is the answer to your compaction problems whether compacting highway subgrades and bases, airport runways or dam fills, stabilizing soil cement or soil and graded aggregate. It combines a heavy rubber-tired roller with a vibrating mechanism. Offered in 25,000 and 60,000 lb. models.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

"Clothespin Contact"...

in the new G-E Motor Control Center

marks new advance in starter design

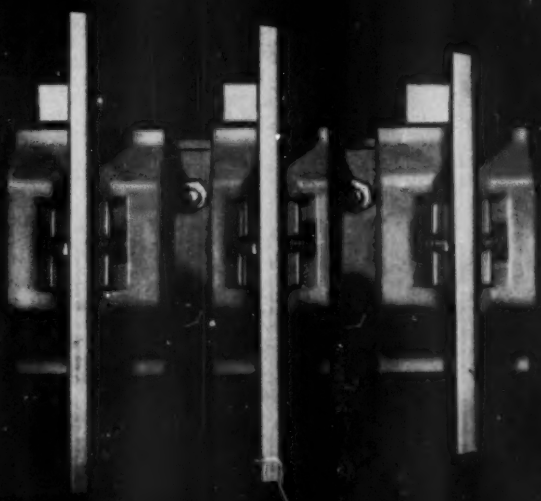
No wiring from starter to bus necessary with this new feature. Simply put the starter in place . . . . and the stabs automatically engage the bus bars in quick, positive connec-

SAVES SPACE This compact centralized motor control system permits you to put all of your control in one spot—simplifies installation, interconnections, and maintenance. Control centers are only 12 inches deep, all wiring is front-connected so units may be placed back to back, in an "L" shape or flush against the wall.

INTERCHANGEABLE

All vertical sections are the same size, all starter units are proportionate. No special engineering is necessary to plan your own G-E control center. To make it even simpler—starter units for motors from 1 to 25 horsepower have the same overall dimensions.

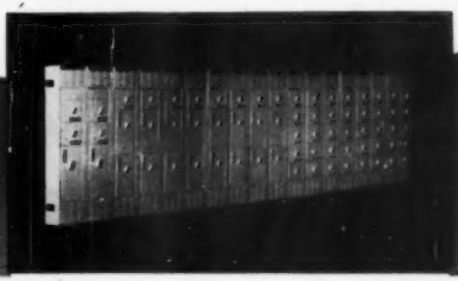
GENERAL ELECTRIC



tion. For emergency handling, the starter can be removed without de-energizing the power bus after a simple removal of the supporting bolts.

PLAN YOUR OWN G-E MOTOR CONTROL CENTER

Contact our sales engineer at the nearest G-E office for copies of an easy-to-use planning chart—or write us for bulletin GEA-4979 which contains additional information. ***Apparatus Dept., Section 676-263, General Electric Company, Schenectady, New York.***

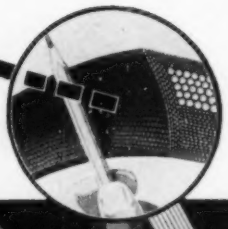


This Simple Test
Shows Exactly How

The CONCAVE SIDE...

(U.S. Patent No. 1813698)

Saves You Money!



Pick up *any* V-belt having the ordinary straight sides and *bend* the belt. Three things will happen, right before your eyes.

(1) The top of the belt is under tension and grows *narrower*. (2) The body, under compression, becomes wider. (3) The sides of the belt *bulge out*. (Figures 1 and 1-A, below.)

Straight-Sided V-Belt

How Straight-Sided V-Belt Bulges in Sheave-Groove

This bulging of the straight-sided V-belt in its sheave-groove costs you money in *two* ways—(1) The bulge causes uneven sidewall wear—*shorter life!* (2) The bulging side cannot evenly grip the wall of the sheave groove—a loss in *transmission efficiency!*

In figures 2 and 2-A, you see how the precisely engineered *concave* side of the Gates Vulco Rope exactly corrects this bulging.

Gates Vulco Rope with Concave Side.

No Side Bulge. Precise Fit in Sheave-Groove.

Two distinct *savings* result. (1) The Gates Vulco Rope wears evenly—*longer life!* (2) The entire side-wall grips the pulley—carries heavier loads and *sudden load increases* without slippage:—saves *belts* and also *saves power!*

The Mark of SPECIALIZED Research

The Concave Side is *MORE IMPORTANT NOW* Than Ever Before

Because the sides of a V-Belt are what actually drive the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley directly through the belt's sidewalls.

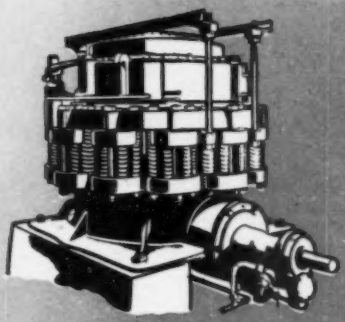
Now that Gates *SPECIALIZED* Research has made available to you SUPER Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side is naturally more important in conserving belt life today than ever before.

498

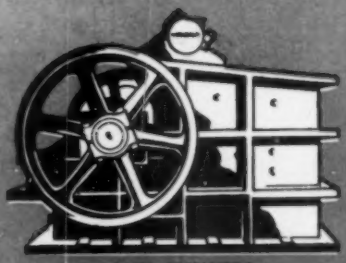
GATES VULCO ROPE DRIVES

Engineering Offices and Jobber Stocks IN ALL INDUSTRIAL CENTERS of the U.S. and 71 Foreign Countries

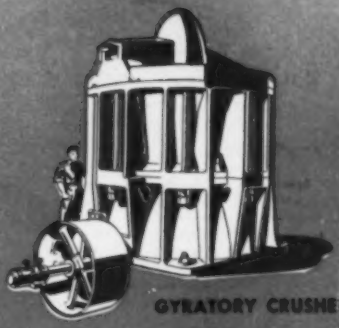
THE GATES RUBBER COMPANY
DENVER, U.S.A.
The World's Largest Makers of V-Belts



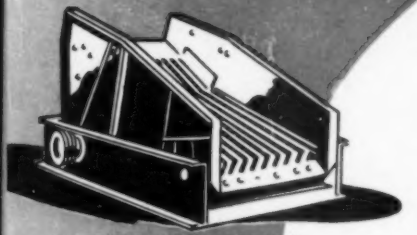
SECOND AND THIRD STAGE CRUSHERS



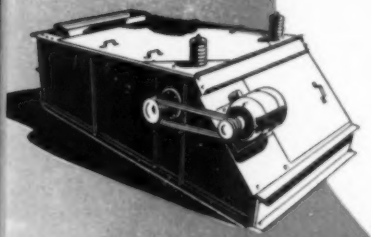
JAW CRUSHERS



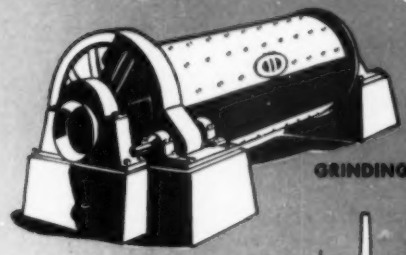
GYRATORY CRUSHERS



VIBRATING BAR GRIZZLIES



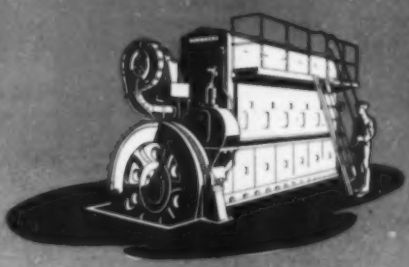
ROD DECK SCREENS



GRINDING MILLS

ROTARY KILNS

DIESEL ENGINES



The Cement Industry turns to

NORDBERG

FROM primary crushing of limestone direct from the quarry, through second and third stage crushing, screening, raw grinding, calcining and finish grinding, cement companies all over the world are using Nordberg equipment.

The Nordberg complete line of equipment includes Gyratory and Jaw Crushers for primary crushing; Symons Cone Crushers for second and third stage crushing; Vibrating Bar Grizzlies, Symons Rod Deck Screens and Horizontal Vibrating Screens for sizing; Rotary Kilns; and a complete line of Ball, Tube, and Compartment Grinding Mills. For dependable, low cost power, the complete line of Nordberg Diesels will provide the solution to your power problem.

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Vol. 42 JULY 1949 No. 1

PIT AND QUARRY

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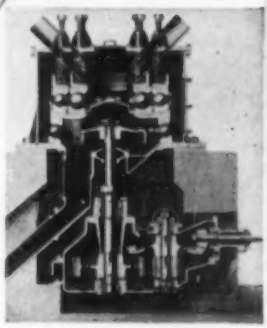
better job
at lower cost
for MEDUSA



Installation of two center-fed B&W Pulverizers in raw grind department at Dixon, Illinois, plant of Medusa Portland Cement Co. Three-stage grinding elements are shown in sectional view of mill at right.

The B&W Closed-Circuit Raw Grinding System

With economy and more uniform kiln-feed as their principal objectives, Medusa Portland Cement Company, Dixon, Ill., recently completed a two-year plant rebuilding program. With six kilns, the annual plant capacity is about 1,500,000 bbl.

Raw grinding is accomplished with two B&W Type B Pulverizers, in closed circuit. Material containing over 5 per cent moisture is handled successfully.

Large output, uniform fineness, and long, efficient service-life are some of the advantages that result from B&W's unique ball-bearing principle of grinding.

BABCOCK & WILCOX

Write for Bulletin 3-438, which describes this installation.

C-97

THE BABCOCK & WILCOX CO., 85 Liberty St., New York 6, N. Y.

editorial

The Importance of Waste Elimination

THERE has been much speculation recently regarding the falling off in business, the coming of a buyer's market, the possibility of a depression, proposed tax increases, a fourth-round wage increase, prices, the stock market, increasing unemployment, etc. Also, much has been said about labor productivity, and it is generally believed that costs and prices cannot be substantially reduced until productivity resumes its pre-war upward trend. It is agreed that only through such price reductions can the buyer's strike be ended and business volume remain on a high level.

To us it seems that there are many reasons why costs and prices are too high and that several of these must be corrected before any important improvement can take place. Perhaps the most important reason is the low level of productivity per man-hour worked. Some of this is, of course, due to deliberate feather-bedding and output limitations set by unions, conspicuously in the building trades. The lack of industrial thrift by both management and workers and the lack of adequate tools and equipment are also important, and these are probably largely responsible for low productivity.

There can be no doubt in anyone's mind that the average worker today is less efficient, conscientious, and dependable than before the war. His attention is concentrated less on turning out a good product and doing an honest day's work than on getting more pay for less work and shorter hours.

There are many reasons for this change in attitude and one of them is, of course, the growing power of the unions and the protection if not encouragement they extend to the shirking worker. It is also true that, because there has been a shortage of workers since before the beginning of the war, workers in general have developed a feeling of exaggerated personal importance and independence which has been encouraged by the growing power of their unions and the decreasing power and control over them of their employers. This situation is now changing, however, and with business at a lower level, and the unemployed pool growing, many such workers are beginning to worry about the security of their jobs and the attitude of their employers. Now is the time for employers to reassert themselves by making it evident that those workers doing the best and most conscientious work will be the ones most likely to retain their jobs. Employers can also help the situation materially by correcting the many harmful attitudes and practices of which they themselves are guilty.

The all-consuming urge for greater production at all costs which contributed so materially to the setback in labor productivity since before the war is largely responsible for a lack of thrift in business in general. During the war and since everyone has been so intent on getting more output that many wasteful habits and practices have developed among both workers and employers. Authoritative sources state that, since the beginning of the war, the consumer has been paying up to 20 percent more for many products because of spoilage and inefficiency. This is a direct penalty, but what about the added cost due to the mental attitude bred into the worker by these careless and slovenly practices?

MANY companies would like to do something about waste but are afraid to take drastic steps for fear of antagonizing their workers. This danger is now much less important than it was a year or even six months ago and it will continue to lessen. Actually much progress has already been made in this direction and the results obtained are highly encouraging. To be successful the methods used must be impersonal, open and aboveboard.

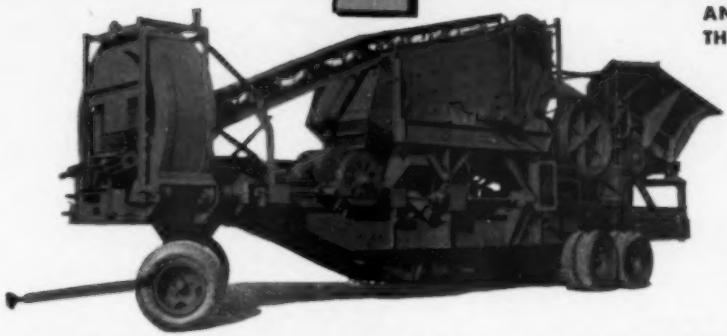
Management has been reluctant to effect savings in ways that seemed trivial, such as asking employees to turn off lights when not needed, to shut off a machine when not in use, not to waste oil and grease, to make long distance calls only when no other method of communication will do, not to throw away tools and other items which can be readily repaired, etc. It was found that the workers at first resented to some exent what looked like penny-pinching; but once it was explained to them that a thrifty company is the most likely to survive when times get bad, and that such thrift amounts to job insurance, their attitude changed. Once the companies started enforcing a reign of economy the employees gave it their wholehearted approval and cooperation and many of them have carried this lesson right into their own homes.

Some of the savings reported by careful attention to the elimination of all kinds of waste are impressive. One large nonmetallic minerals producer reports a saving of $58 per day on the telephone bill alone. A lime plant reduced its power bill 2 percent, or $1100 per year, by shutting down idle equipment, etc. Another, by changing suppliers, reduced the distance its raw materials had to be hauled. Still another started using the wrapping paper its bags were received in to line freight cars, instead of buying paper for that purpose.

The direct savings resulting from the elimination of waste are important, but even more important are the indirect benefits which accrue from orderly and thrifty operation of an industry. The morale of the entire personnel reaches a higher level and each worker, regardless of his individual importance, becomes more conscious of the quality and quantity of work done. It should not take long under such conditions for both employer and employee to realize that only through cooperation can a company function efficiently in a competitive economy. If employers and employees work together with the same objectives and with benefit to both, many of the other obstacles which have interfered with the smooth functioning of industry will disappear.

Walter E. Trasker

1 UNIVERSAL QUARRY PLANT REPLACES 2 SINGLE-UNIT PLANTS



ANOTHER UNIVERSAL FIRST
THE 293-QH LIMEROK PLANT

For Aglime and Roadrock. A two-stage plant with jaw crusher primary and hammermill secondary. Designed for 100% crushing. Produces aglime or roadrock separately or simultaneously in profit-making capacities for agricultural use, or road and concrete construction. Engineered with field proven Universal features. Capacities: Aglime—up to 50 t.p.h. Roadrock—minus 1" up to 75 t.p.h. Write for Form 293-QH and complete details.

DOUBLE-UNIT PERFORMANCE AT LOWER COST

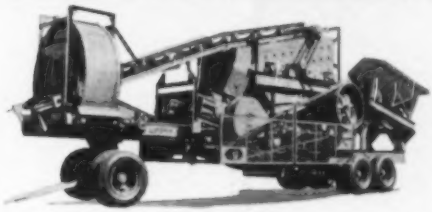
- LOWER INITIAL COST
- LOWER OPERATING COST
- LOWER MOVING COST
- LOWER MAINTENANCE COST

Universal combines both primary and secondary crushing operations on a single truck to give double-unit performance at lower cost. "Stream-Flo" engineering results in a complete crushing, screening and loading plant in one compact single unit. You get capacity for those large contracts, portability to handle smaller jobs profitably, and save substantially on original investment.

●

***Before you invest in either portable or stationary equipment for rock, gravel, or aglime—compare the profit-making features offered by* UNIVERSAL.**

ROCK AND GRAVEL
THE 293-Q PORTABLE STONE PLANT



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news of the industry

PIT AND QUARRY

$4,800,000 Cement Plant To Be Built in Jamaica For Caribbean Cement Co.

Construction will begin soon on a $4,800,000, 1800-bbl.-per-day cement factory in Jamaica, B.W.I., financed by American, British and Jamaican capital. Located on the outskirts of Kingston, the island's capital, the new factory will supply all Jamaica's cement needs and may have a small surplus for export to other British Caribbean islands. The last stage of the financing, an offering of shares to the Jamaica public, was completed on May 16, after which construction started. The whole of the required capital has been underwritten.

The new factory will be operated by the Caribbean Cement Company, Ltd., a Jamaican firm organized in June, 1947.

The preliminary planning and negotiations, which gave the cement company an exclusive manufacturing license and an attractive tax-free write-off concession, were co-ordinated by American and Foreign Enterprises, Inc., of New York City. Credit is also given to American and Foreign Enterprises for arranging to have nearly half the required capital underwritten by another American company, World Commerce Corporation.

The new cement operating company brings together an impressive group of individuals. Chairman and founder of the new company is Sir William Stephenson, Canadian-born British industrialist. The board also includes the following: Edward R. Stettinius, Jr., former chairman of the U. S. Steel Corporation and former Secretary of State of the United States; N. M. Jensen, chairman of Tunnel Portland Cement Company, Ltd., and of F. L. Smidth and Company, Ltd., of London; and Colonel R. L. Benson, chairman of Robert Benson, Lonsdale and Company, Ltd., a leading London investment banking house. Three prominent Kingston business men complete the board. They are Charles E. D'Costa, N. N. Ashenheim, and American-born George W. MacDuff, head of the Jamaica Public Service Company.

Orders have been placed in England with F. L. Smidth and Company, Ltd., for the principal items of cement machinery. This firm has also been engaged to supply the company's engineers; and Tunnel Portland Cement Company is taking a substantial financial interest in the new concern.

All the required raw materials are available locally at or near the plant site. The company will build its own power station and will pipe fuel oil directly from a nearby oil company tank installation.

N.C.S.A. Manufacturers Div. Executive Committee to Meet

Cottrell Farrell, chairman of the manufacturers division of N.C.S.A., has called a meeting of the executive committee of the division, to take place at The Greenbrier, White Sulphur Springs, W. Va., on July 20.

Chairman Farrell urges that members of the division send to him prior to the meeting any matters which they wish considered by the executive committee.

Coming Events

October 10-14, 1949—San Francisco. First National West Coast meeting, American Society for Testing Materials, Fairmount Hotel.

October 19-21, 1949—White Sulphur Springs, W. Va. Fall meeting, National Industrial Sand Association, The Greenbrier.

October 24-28, 1949 — Chicago. 37th National Safety Congress and Exposition. Stevens, Congress, Morrison, Sherman, Palmer House hotels.

January 22 (week of), 1950—Chicago. 34th annual convention and exhibit, National Sand and Gravel Association, Stevens Hotel.

January 22 (week of), 1950—Chicago. 20th annual convention and exhibit, National Ready Mixed Concrete Association, Stevens Hotel.

January 30 (week of), 1950—Chicago. 33rd annual convention and exhibit, National Crushed Stone Association, and annual convention, Agricultural Limestone Institute, Stevens Hotel.

Plant Improvements Spread Out Over 4 Years To Keep Up Production

In order to up the capacity of North American Cement Corporation's Catskill plant from 4000 to 6000 bbls. per day and still maintain production at current levels, it was necessary to plan the improvement work in stages over a period of four years.

The first stage in this program was the installation of a 10 ft. 6 in. by 340 ft. kiln, which replaced a smaller 8- and 7-by 182-ft. kiln. Capacity of the new kiln is rated at 2200 barrels per day with a fuel ratio of 89 lbs. of coal per barrel. The old kiln turned out only 600 barrels a day. Further improvements in the kiln department call for the replacement of two other small kilns with a second 10 ft. 6 in. by 340 ft. unit. With the addition of the second big kiln, this department will have a capacity of 6000 barrels a day.

Simultaneous with the installation of the first 340-ft. kiln, a third raw preliminator was added to the mill, bringing the capacity of the raw grinding department up to 6000 barrels per day. Further improvements will be made in this department.

The company is now installing an additional 3000 kv.-a. transformer substation for supplementing the present 4,000 kv.-a. station. When the second kiln is set, the company plans to abandon its waste-heat power generators, relying exclusively upon purchased power.

This year the company plans to put in a 9½- by 14-ft. finish preliminator and convert the four compeb mills into two-stage ballpeb mills. This project will boost the clinker grinding capacity past 6000 barrels per day.

Waukesha Lime & Stone Co. Bought by Charles Coburn

Ownership of the Waukesha Lime and Stone Company, Inc., Waukesha, Wis., formerly operated by the John O'Laughlin estate, recently passed to Charles Coburn. This firm produces crushed stone and agricultural limestone for distribution throughout southeastern Wisconsin and the Milwaukee area.

Mr. Coburn was formerly executive vice-president of the Carbon Limestone Company of Youngstown, O.

Labor-Company Harmony Celebrated by Formation Of Thirty-Year Club

In recognition of 60 years of harmonious relations, the members of the United Cement, Lime, and Gypsum Workers Union and the Louisville Cement Corporation recently organized a 30-year club. The cement firm operates plants at Speed and Milltown, Ind.

Charter members of the new organization are employees having a record of 30 years' service. At Milltown there are 78 eligible workers and at Speed, 35. The cement corporation will give each club member a 17-jewel watch. New members will be admitted as soon as they become eligible.

World Tourist from Pakistan Visits Many Cement Plants

A. V. Mohan

A. V. Mohan, chief engineer of the Associated Cement Companies, Ltd., P. O. Sind Cement Works, Rohri-Sind, Pakistan, recently toured the world by airplane, visiting cement plants, auxiliary plants and factories manufacturing cement-making equipment.

Beginning in Europe, Mr. Mohan flew to England and then to the United States. He later visited cement installations in the Hawaiian Islands, Japan and China.

Mr. Mohan states that he has been serving as works manager of the Sind Cement Works in Pakistan, one of the 16 plants included in the Associated Cement Companies, Ltd., of Bombay. He has been actively associated with the cement industry of his country for the last 12 years.

N.C.S.A. Board of Directors To Meet on July 21

The midyear meeting of the board of directors of the National Crushed Stone Association will be held at The Greenbrier, White Sulphur Springs, W. Va., on Thursday, July 21, 1949.

It is the responsibility of the board to determine policy with respect to association activities, and this can most effectively be done if the board is kept advised by the membership of matters of importance. President Steve Weston therefore urges the members to submit to the board any matters which they feel warrant consideration.

$200,000,000 Bond Issue For Roads Approved by N. C.

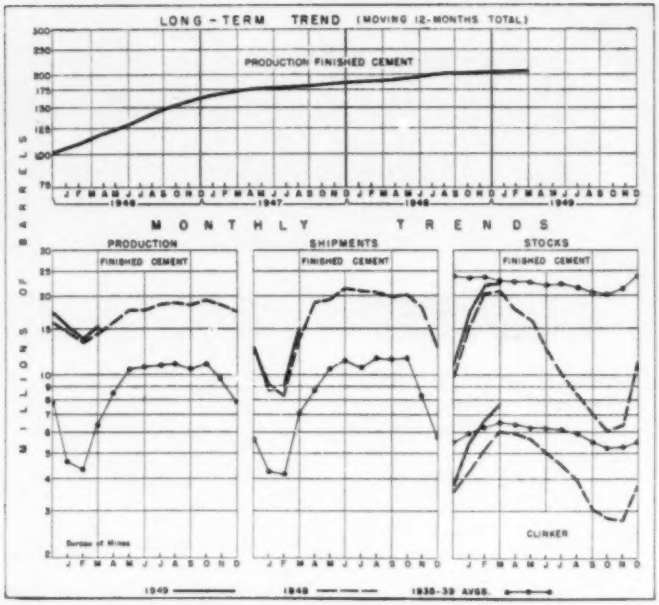
North Carolina voters gave their approval to a $200,000,000 road bond program by a wide margin in a special statewide election June 4. At the same time they also approved a 1-cent increase in the state gasoline tax, which was contingent upon adoption of the bond issue. The gasoline tax boost, which will lift the total rate to 7 cents per gallon, will go into effect next January 1.

Plans include the paving of 12,000 miles of rural roads, with special attention to school bus routes, and putting all-weather surfacing on another 35,000 miles.

The road funds will be allocated among the counties according to their area, population, and road mileage, as written into law by the 1949 North Carolina legislature.

In the special election, North Carolina voters also approved a $25,000,000 school building bond issue. Revenue from this bond issue will be used to help counties in their school building construction.

The Calaveras Cement Company of San Francisco makes safety a home-talk topic by sponsoring a safety essay contest for local schools.


LONG-TERM TREND (MOVING 12-MONTHS TOTAL)
PRODUCTION FINISHED CEMENT
BARRELS
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1946 1947 1948 1949
MONTHLY TRENDS
MILLIONS OF
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FINISHED CEMENT
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FINISHED CEMENT
STOCKS
FINISHED CEMENT
CLINKER
Bureau of Mines
J F M A M J J A S O N D
1949
1948
1938-39 AVGS.

SUMMARY—The portland cement industry produced 15,439,000 barrels of finished cement in March, 1949, as reported to the U. S. Bureau of Mines. This figure represents an increase of 6 percent over the production reported for March, 1948. Mill shipments totaled 14,539,000 barrels, an increase of 4 percent over the March, 1948, figure, while stocks of 23,106,000 barrels on March 31 were 11 percent above the March, 1948, totals. Clinker output in March, 1949, amounted to 16,600,000 barrels, representing an increase of 8 percent over the corresponding month of the previous year.

PRODUCTION—The output of 15,439,000 barrels of finished cement in March, 1949, came from 146 plants located in 35 states and Puerto Rico. In the same month of 1948, 14,502,000 barrels were produced in 146 plants. Clinker production increased 8 percent over the March, 1948, figure.

SHIPMENTS—Mill shipments of 14,539,000 barrels amounted to 4 percent more than those reported for March, 1948. The demand for cement in March, 1949, as indicated by mill shipments, increased over that of the previous month (February, 1949) 9,134,000 barrels. Shipments were higher in 12 districts and lower in 7, than those reported in March, 1948. The changes range from a decrease of 16 percent in the Tennessee district to an increase of 52 percent in the western Missouri, Nebraska, Oklahoma, and Arkansas district. An increase of 9 percent is also indicated for the Puerto Rican district for March, 1949.

STOCKS—Stocks of 23,106,000 barrels of finished cement on March 31 were 11 percent above the March, 1949, figure, while clinker stocks, as of the same date, amounted to 7,783,000 barrels, an increase of 28 percent.

Kansas Plant Converts and Remodels Old Facilities

Thompson Crushed Rock Co., Kansas City, Kans., completely rebuilt and remodeled its plant late in 1948. The original ballast plant has been converted into a modern commercial stone plant with a rated capacity of 300 t.p.h.

Improvements include the installation of a 30-in. Allis-Chalmers gyratory crusher; two Allis-Chalmers Type R reduction crushers; and five new Rippl-Flo 5- by 10-ft. screens. With a smaller crew, the new plant will turn out approximately three times as much stone a day as the old plant.

In addition to modernizing the plant, the quarry was outfitted with a Sullivan Hydro-Drill. Hauling is done with K-11 International trucks fitted with specially designed dump beds to give low loading clearances and large capacities. Products produced at this plant include all sizes from 150-lb. riprap down to 8-mesh agstone.

R. G. Hay—Prominent Figure in Sand Industry Dies at 59 Aboard Train

Russell G. Hay, vice-president of the Ayers Mineral Company, Zanesville, O., of that city, died on June 12 in Florida. He was a founder and a past president of the National Industrial Sand Association.

From 1919 to 1922 Mr. Hay was associated with the Goodyear Rubber Company's sales force, serving as the firm's representative in Johannesburg, South Africa. He joined the Ayers Mineral Company in 1922 and was engaged in sales work until 1942, when he was named president upon the death of E. M. Ayers, the founder of the concern. In 1947 he became vice-president and served in an advisory capacity. Mr. Hay was 59 years of age. He was stricken with a heart attack on May 21 while aboard a train en route to Zanesville from his winter home in Clearwater, Fla. He had been in ill health for the last three years.

Clam and Reef Shell as Asphalt or Concrete Base

A newly-organized Mississippi corporation, the Gulf Shell Corp., has engaged in the enterprise of gathering clam and reef shells which, it is claimed, are excellent as a base material for asphalt or concrete construction. Shells are taken from Gulf waters. At present the firm has locations in Gulfport, Ocean Springs, Bay Saint Louis, Pascagoula, Miss., and later will have another base in Biloxi, Miss. Headquarters are located at West Pier, Gulfport, Miss. W. D. Ritchey is president of the corporation, and Ralph Stewart is manager.

Cleveland Gypsum Company Operates New Perlite Plant

Designed to manufacture lightweight aggregate for plaster, concrete and fill insulation, the Cleveland Gypsum Company's new Perlite processing plant at Cleveland, O., turns out approximately two carloads of the material per day. The ore is shipped in from Colorado.

The new facilities are located adjacent to the company's plaster mixing plant, and the plaster aggregate is conveyed in bulk from the furnace to the bins over the plaster mixing equipment. In addition to manufacturing a pre-mixed perlite plaster, Cleveland Gypsum packages the aggregate separately in 4-cu. ft. bags for job mixing.

H. A. Stein and J. B. Murdock, both of the Perlite Corporation of Phoenix, Ariz., designed the plant and supervised its construction.

Correction

In an article describing developments in lime spreader bodies on page 105 of the May, 1949, issue of PIT AND QUARRY an error occurred in the description of the equipment made by the Flink Sales Co., Streator, Ill. It was stated that a phosphate spreader attachment lays phosphate uniformly at a 1-ft. width. This should have been 16-ft. width.

• Governor Thomas E. Dewey and State Superintendent of Public Works Bertram D. Tallamy became members 1 and 2 of the New York Good Roads Association on April 28. Membership cards bearing those numbers were presented to them by Charles H. Sells, executive director of the New York Good Road Association, in ceremonies at the governor's office in the capitol.

Freeport Sulphur Company stockholders recently approved a supplemental retirement plan to make total payments from federal social security and the company's plan generally proportional to the employee's compensation and years of service.

New Quarry Furnishes Rock For Flood Control Project

Enumclaw, one of those Washington towns with the unique labels, is the location of a new industry, a quarry opened by A. L. Morgan, a Seattle contractor. Under contract with the Army Engineers for a flood control project, Mr. Morgan recently began the removal of 20,000 tons of rock, which will be transported in a fleet of 15 trucks to the Puyallup River—a haul of approximately 28 miles.

After the completion of the project, however, operations at the quarry will be continued as a permanent industry.

F. B. Kilbourn Succumbs—Dies Unexpectedly in Montreal

Frederick B. Kilbourn, O.B.E., president of the Canada Cement Co. and wartime steel controller of Canada, died unexpectedly on May 20 while preparing to leave Montreal for a meeting of the Portland Cement Association at White Sulphur Springs, W. Va. He died of a heart seizure aboard a New York train before it left the station.

Frederick B. Kilbourn

The 65-year-old industrialist was also president of Canadian Refractories, Ltd., and Dolomite Refractories, Ltd.

Mr. Kilbourn began his career in the cement business when he discovered that the rock formation of Montreal Island contained the necessary materials for the manufacture of cement and persuaded the old Lakefield Portland Cement Company to build a plant in Montreal. At the age of 21 years he supervised the construction of this plant; and when it was opened, he operated it, continuing in this capacity after the firm was taken over by the Canada Cement Company.

He was superintendent of the No. 1 plant of Canada Cement from 1909 to 1919, and served as general superintendent of the firm from 1919 to 1939. Elected a director of the concern in 1931, he was appointed vice-president six years later and became assistant manager in 1939. Mr. Kilbourn was made general manager in 1942 and president in 1948.

J. D. Piper in Charge Of P.C.A. District Office At Austin, Texas

The Portland Cement Association district offices in Dallas and Austin, Texas, have been consolidated into a single district office located in Austin, according to an announcement by Carl D. Franks,

James D. Piper

the Association's vice president for promotion.

"This change was put into effect," said Mr. Franks, "in order to centralize direction of the work of our field engineers in Texas, and thus increase the effectiveness of Association service in all fields of cement and concrete use throughout the state."

James D. Piper, formerly the Association's district highway engineer in Dallas, has been appointed district engineer in charge of all Association work in Texas.

Mr. Piper joined the Association in 1937 as a structural engineer in Oklahoma City. In 1939 he was transferred to the Austin district as a structural engineer for the northern half of Texas.

Mr. Piper is a licensed architect and a registered professional structural engineer in Texas. He is also an associate member of the American Society of Civil Engineers.

Charles A. Clark, who has been in charge of PCA activities in other than the highway paving and bridge fields, will continue with the Association as office engineer in the newly consolidated Austin office. Mr. Clark, a civil engineering graduate, has been with the Association for more than 27 years.

Eastern Plant Co-operates With Dust-Reduction Effort

Officials of the Michigan Limestone & Chemical Company at South Buffalo, N. Y., recently made a move which won high favor for the firm among the city's residents when they installed a dust collector for a kiln stack at their plant. This effort to cooperate with the city's dust abatement program has had gratifying results, capturing dust at the rate of 500 lbs. per hour, or 6 tons per day.

According to George W. Mintz, the firm's sales and production manager, tests proved the equipment, manufactured by the Dustex Corporation of Buffalo, to be 98 percent efficient. Cost of the equipment was $30,000. The material reclaimed is of low value and does not pay for the device.

Other measures taken by the company to reduce air pollution include replacement of two steam locomotives with a diesel engine at a cost of $27,000 and the installation of a $15,000 dust collector for the plant's ventilating system. Coal-burning heating units were also converted to oil.

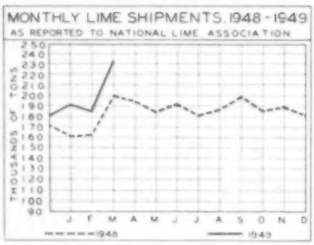
Washington Plant Processes Gravel by Mass Production

Columbia Concrete Pipe Company's "push-button" gravel operation on the Wenatchee-Entiat highway in Washington has been called a "mass-production system" of recovering gravel. The material is placed on an endless belt, automatically washed and screened and then transported by truck. Only two men are needed to operate the plant, but trucks are loaded at the rate of one every five minutes.

More than 5,000,000 cu. yds. of material has been marked out for processing.

Washington Concern Builds Plant for Highway Contract

The Smith Rock Quarry Company, operators of a quarry west of Camas, Wash., recently built a crushing plant on the Hamilton Ranch south of Hamilton Creek. The plant was erected to process rock for a contract to supply material for a highway resurfacing project. Current operations will turn out crushed rock for this contract, but the firm will supply other users later on.



According to data collected by the National Lime Association, 51 companies in March, 1949, shipped 231,139 tons of lime (142,721 quicklime; 88,418 hydrate). Reporting companies represent 59.6 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments for the month by all plants were approximately 426,600 tons. Shipments by uses and grades for march, 1949, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	3,881	23,127
Building	15,663	36,517
Chemical	123,177	28,774
Total	142,721	88,418

U.S. Bureau of Mines Issues Preliminary Report On 1948 Lime Output

Officials of the National Lime Association's publication, *Limeographs*, feeling that U. S. Bureau of Mines statistics on annual United States lime production would be more significant to the industry if published more promptly, requested the Bureau to issue a preliminary report for 1948. (Annual statistics heretofore have been delayed until 10 to 14 months after the given year has ended.)

In response to this request, the Bureau has released the following report, which is necessarily in "round figures:"

Total lime shipments (including quick and hydrated lime and dead-burned dolomite) for 1948 were 7,280,000 short tons, 5,450,000 of which represent quicklime and 1,830,000 hydrate. This is the *all-time record* year for lime shipments, exceeding the previous record year of 1947 (as reported in the February, 1949, *Limeographs*) of 6,778,979 short tons. In contrast, the peak war year for lime production was 1943, when 6,596,000 tons were shipped. These figures on lime shipments amply reflect the tremendous industrial and construction activity in the United States since VJ-Day. Total value of lime products in 1948 increased 14 percent, and shipments increased 7 percent over the previous record year of 1947.

The report also reveals that the total sale of lime for finish coat increased 18 percent over 1947. In 1948 finishing lime shipments from Ohio amounted to 87 percent of the total country-wide shipments for this use. Also, 73 percent of the total shipments of hydrated lime from all Ohio lime plants was used as finishing lime, and was shipped to all parts of the United States.

The final figures for 1948, which will be issued toward the end of this year, should not vary more than 1 to 2 percent from those given in the preliminary report.

Ahearn Addresses Meeting Of U.S. Chamber of Commerce

Vincent P. Ahearn, executive secretary of the National Sand and Gravel Association, was one of the speakers at the annual luncheon of the Chamber of Commerce of the United States, which was held at Washington, D. C., on May 4. The subject of Mr. Ahearn's address was *The Public Policy of the United States with Reference to Relationships between Employers and Employees.*

Other speakers at the luncheon were the Hon. Forrest C. Donnell, U. S. senator from Missouri, and Hoyt P. Steele, vice-president of the Benjamin Electric Manufacturing Co., Des Plaines, Ill.

The Crystal Pool Sand and Gravel Co. of Longview, Wash., has been put up for sale for $56,000, according to papers in the county auditor's office.

Materials Shortages, Lower Prices Indicated in Recent Dodge Survey

BUILDING cost trends and expectancies, and economic adjustments within the building industry which have taken place since the peaks in volume and costs were reached last year, are revealed in an opinion survey among builders conducted by F. W. Dodge Corporation, the findings of which were made public on June 18.

The survey shows that costs of building single-family houses and large-type buildings in the nation as a whole declined 5 percent between May 1, 1948, and May 1 of this year.

It reveals further that costs are expected by November of this year to decline another 8 percent, builders in general anticipating a downward movement through the remainder of the current building season.

While three out of ten builders surveyed report adequate supplies of all materials and equipment, the remaining 70 percent are still hampered in their operations by short supplies of one or more of the metals, metal products, masonry materials or lumber and millwork items.

Approximately one quarter of the builders reported that no materials continue at peak price levels or continue to rise, but the remaining three quarters find that one or more items, particularly in the metals and metal products group and in the masonry materials group, are at their peak or continue to rise.

There has been noted a real improvement in two factors—namely, excessive time required in shopping for and obtaining materials, and irregular deliveries of materials, both of which were important cost inflation elements in the immediate post-war years.

There was almost unanimous opinion that the productivity per man-hour of on-site building craftsmen has improved during the last year, with 10 percent improvement being most often mentioned. Further improvement in productivity of both skilled and unskilled workers during the remainder of the year is expected.

Lump-sum contract letting has returned as general practice in the building industry, the builders indicate, with 72 percent reporting that three quarters or more of their current work is being done under firm-bid contracts. During the immediate post-war period of soaring costs, many builders were accepting only cost-plus-fixed-fee contracts in order to protect themselves against losses on work done.

The questions asked, summaries of opinions, and important regional variations, follow:

1. In the area of your operations, are building costs higher or lower than they were 12 months ago?

a) *Single-family houses.* Analysis: 74.80 percent of those answering the question reported costs *lower*. The median percentage decline, including those answering *higher*, *lower* and *same*, was 5 percent. The extremes were reported by the mountain states, where 46.14 reported costs *lower*, with the median there showing no change, and the Pacific states, where 81.40 percent of those answering reported costs *lower*, with the median decline reported as 10 percent.

(b) *Large-type buildings.* Analysis: 77.28 percent of those answering the question reported costs *lower*. The median percentage decline, including those answering *higher*, *lower*, and *same* was 5 percent. The extremes were reported by the mountain states, where only 49.5 percent reported costs *lower*, with the median indicating a decline of 3 percent, and the South Atlantic states, where 94.60 percent reported costs *lower*, the median for all answering being a decline of 8 percent.

2. If the current trend is downward in your area, how long (in months) do you expect the downward trend to continue? Analysis: 73 percent of those returning the questionnaire answered *downward*, the remainder giving no answer. The median expectancy of length of the downward movement was six months. The most extreme regional variation was reported in the South Atlantic states, where 87.93 percent of those returning the questionnaire answered *downward*, with the median duration six months.

3. If the current trend is downward, how far do you expect it to go (in percentage below present costs)? Analysis: 69 percent of those returning the questionnaire answered *downward*, 9.27 percent answered stable and 21.94 percent did not answer the question. Of those answering, 88.11 percent replied *downward* and 11.88 percent replied stable. The median downward cost trend was estimated at 8 percent, including the figures from the downward and stable answers. Several areas reported a downward cost drop expectancy of 10 percent, namely, New England, West North Central, South, Atlantic, West South Central, and Pacific Coast states. The Middle Atlantic, East South Central and Mountain states estimated the decline expectancy at 5 to 6 percent.

4. Do either of the following factors affect costs in any significant way at the present time?

(a) *Excessive time required in shopping for and obtaining materials.* Analysis: 82.86 percent reported *no* and 17.13 percent reported *yes*. In no region was the percentage of *yes* answers more than 27.50.

(b) *Irregular deliveries of materials.* Analysis: 68 percent reported *no* and 32 percent reported yes. However, more than 55 percent reported *yes* to the question in the West North Central states. In the Pacific Coast states 77 percent considered irregular deliveries of materials a factor affecting costs.

5. *What materials, if any, are still tight in your markets?* Analysis: 28.18 percent answering the question reported *none*. However, one or more metals and metal products were indicated in short supply by 61.51 percent of those answering; 20.09 percent mentioned one or more masonry materials; and 13.72 percent listed lumber and millwork. Many reported shortages in the three generic classifications. Metals and metal products were reported in especially tight supply in the Mountain states.

6. What materials continue at peak price levels or continue to rise? Analysis: 24.75 percent of those answering the question reported *none*. However, 66.17 percent mentioned one or more masonry materials; 60.78 percent mentioned one or more metals or metal products, and 14.21 percent listed lumber and millwork. The materials price picture was somewhat uniform in all regions except in the Mountain states, where peak or rising prices seemed predominant.

7. Has the productivity per man-hour of on-site workers improved this year as compared with 1948? (Answer in percentage of improvement, if the answer is *yes*.) Analysis: 84.18 percent of those answering the question answered *yes*, and 15.81 percent answered *no*. Only 2.7 percent of the respondents failed to answer the question. The median percentage of improvement in the year was 10. Those regions reporting less than 10 percent improvement were New England, 5; Middle Atlantic states, 5; East South Central, 5; Mountain states, 5. No regions reported more than 10 percent improvement.

8. With regard to the remainder of 1949, do you expect increased output per man-hour?

(a) *Skilled building craftsmen.* Analysis: 67.05 percent of those answering said *yes* and 32.95 per cent said *no*. There were no exceptional regional differences of opinion. In each area more than half of the respondents expected the improvement to continue.

(b) *Unskilled labor.* Analysis: 67.28 percent of the respondents said *yes* and 32.71 percent said *no*. In all areas excepting the Mountain states a majority answered yes. In this region 55.5 percent said no.

9. Is overtime pay a significant cost item in your current operations? Analysis: 89 percent of the respondents said *no*, and 11 percent answered *yes*. Only in the West North Central region did overtime pay figure rather prominently. Here 35 percent listed it as a significant item in costs.

10. What percentage of your current dollar volume of work is being done on a lump-sum contract basis? Analysis: 24.01 percent reported that all of their work was being done on a lump-sum contract basis; 26.55 percent reported 90 to 99 percent on a firm bid basis; 21.01 percent reported 75 to 89 percent on lump-sum basis; and 28.40 percent reported less than three quarters of their current work on lump-sum contracts. There did not appear to be inordinate regional differences in contract letting practices.

PIT AND QUARRY INDUSTRIES WELL REPRESENTED AT SECOND SOUTHWESTERN INDUSTRIAL EXPOSITION

One of Pit and Quarry's ubiquitous field editors was in Fort Worth, Texas, during the showing (May 8 to 15) of the Second Annual Southwestern Industrial Exposition. As the accompanying photographs show, the pit and quarry and concrete products industries were well represented, a fact which prompts us to hope that our readers are beginning to recognize the importance of aiming at least a share of their promotional effort at the ultimate consumer.

Among the companies which had attractive displays at the exposition were the Fort Worth Sand & Gravel Co., one of the largest producers of aggregate and ready-mixed concrete in the Southwest; Muehleisen Perlite Process, Inc., Fort Worth, which designs, builds and installs the Muehleisen furnace for expanding perlite; Chase Building Products Co., which produces concrete masonry units at both Fort Worth and Dallas; Texas Concrete Products Corp. (Texcon) of Austin, producers of precast lightweight concrete decking and structural members; and Tex-Rock Insulation Manufacturing Co. which produces mineral wool at Temple, Texas.

The exposition was held in spacious exhibit buildings located at the Will Rogers Memorial Grounds in Fort Worth, and it is estimated that there were more than 150,000 visitors.

Industrial Production in India Increased 15 Percent in 1948

India's industrial production during 1948 increased considerably over that of the previous year and showed a 15 percent rise above the pre-war level. It was, however, short of the peak figure reached during 1943-44. The production increase was largely due to a progressive downward trend in the loss of man-hours.

The principal commodities which recorded increases were cloth, cement, paper, electrical goods, heavy chemicals, metals, machine tools, sugar and salt.

Cement production improved to over 1.5 million tons and paper to 100,000 tons as compared to 1.4 million tons and 93,000 tons respectively in 1947. The production of salt jumped from 1,750,000 tons in 1947 to 2,100,000 tons in 1948.

The two sand and gravel plants operated by the Indiana Gravel Co., Inc., of Indianapolis were sold recently. The plant located at 712 W. 13th St. was purchased by the Indianapolis Redevelopment Commission. The second was sold to two local men for the development of a series of estates surrounding the lake created by the gravel company's diggings over a period of 21 years.

New Sand-Gravel Plant Opened in N. E. California

The Bear River Sand and Gravel Corporation, a newly-organized enterprise in the Placer and Nevada county area of California, is producing concrete aggregate, crushed rock and asphalt product supplies at its plant on the Bear River between Applegate and Weimar. Hourly capacity is rated at 80 tons.

A completely independent crushing plant produces all commercial sizes of crushed rock. A new Barber-Greene asphalt plant provides facilities for plant mix and other asphalt products. B. E. Oliver is president of the firm, and R. A. Graetz is vice-president.

Consider Effect of Court Ruling on Purchase Of Diamond Cement Plant

Attorneys for the Permanente Cement Company and the Pacific Coast Cement Company are studying the effect of the Washington State supreme court decision under which Superior Portland Cement Company may purchase the Diamond Cement plant on Marginal Way.

The plant, which has a capacity of a million barrels a year, has been operated by Permanente the past two years under an arrangement with Pacific Coast Cement Company.

Permanente has issued an announcement that the court decision, and any possible sale of the Diamond plant to Superior Portland Cement "will not alter Permanente's plans to continue selling cement without interruption in the Pacific Northwest market.

Permanente is a California organization controlled by Henry Kaiser. The company said it has steamship capacity for bulk cement to keep its Pacific Northwest market supplied. It can also, it said, install a processing plant on its Seattle property to process excess clinker into finished cement.

Bill for Ohio Turnpike Signed by Gov. Lausche

The Ohio Turnpike Bill, under which a toll road is permitted to be built across the state of Ohio to connect with the Pennsylvania Turnpike, has been passed by the House and Senate of Ohio and signed by Governor Lausche. A likely additional toll road from the Ohio River to Lake Erie is included in the legislation.

600-Foot-Long Cavern Found in California Quarry

Quarry workers at the Santa Cruz (Calif.) Portland Cement Company's plant have been currently engaged in a fascinating pastime, according to a Santa Cruz newspaper. They have been investigating and exploring a newly-discovered limestone cavern, complete with stalactites and stalagmites, within their quarry. The mouth of the cave was exposed early in May when a quarry blast blew the rock and other material from its opening.

Robert A. Kinzie Jr., plant superintendent, and several workmen have penetrated to a point approximately 600 ft. from the entrance of the cavern, whose passage varies from an extremely narrow height to the size of "rooms" 100 by 50 by 12 ft.

After two years of research, the Roseburg Lime Products Company recently began operations at its $100,000 plant near Roseburg, Ore. Associated with Mr. Brubaker in the firm are Clyde Fullerton, Bert Gilbert and M. E. Groshong.

N.Y. Crushed Stone Assn. Holds Two-Day Meeting—Sponsors Two Trips

A two-day session of the New York State Crushed Stone Association, Inc., was held June 27 and 28. On the first day members met at the Hotel Rochester at Rochester, N. Y., for afternoon sessions and the informal dinner.

On the 28th those attending the meeting were privileged to participate in two interesting trips. In the morning they assembled at the LeRoy (N.Y.) plant of the General Crushed Stone Company to inspect that firm's aggregate processing; during the afternoon they visited the Mt. Morris, N. Y., dam construction which is in charge of federal engineers.

The committee on arrangements included George Schaefer, Hi Barnes, Jim Holden and Jack Judge.

Jungwirth Sand & Gravel Co. Opens New Plant at Mill City

Near Mill City, Ore., a new crushing plant was recently opened by Clarence and Francis Jungwirth, operators of a 500-cu. yd. per day plant at Lyons, Ore. The firm is known as the Jungwirth Sand & Gravel Company. The new facilities, expected to have a capacity of 500 to 600 cu. yds. per day, are furnishing material for the new housing unit at Mill City, but will later supply dam administration and local needs, as well as road material.

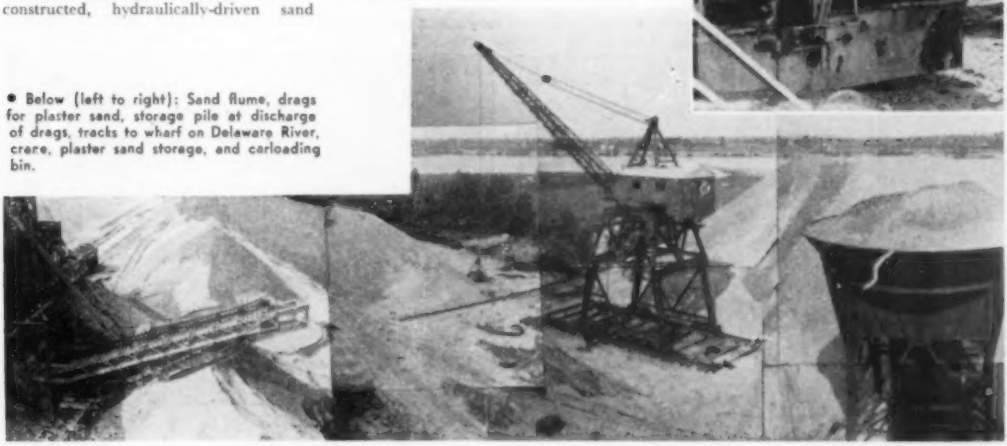
IMPROVED FACILITIES AT WARNER COMPANY'S VAN SCIVER PLANT

The accompanying photographs were received too late for publication with the article, *Warner Company Plant Gets Improved Facilities for Handling Plastering Sand*, written by E. L. Shoemaker and which appeared in the May, 1949 issue of Pit and Quarry. The over-all view of the plant presents an excellent picture of the sequence of operations as they are now carried on as a result of the newly revamped facilities. The reconstructed, hydraulically-driven sand drags, an important part of the improvement program, are shown in the other photograph.

*See PIT AND QUARRY, May, 1949, page 152.

• Right: Reconstructed sand drags are hydraulically driven.

• Below (left to right): Sand flume, drags for plaster sand, storage pile at discharge of drags, tracks to wharf on Delaware River, crane, plaster sand storage, and carloading bin.



30 years ago in Pit and Quarry

Some of the subjects covered in July, 1919, issue of PIT AND QUARRY indicate that conditions then were in some ways similar to those now existing. It was pointed out, for example, that there was considerable pressure on the portland cement industry to lower its prices, in spite of a capacity demand for its product. The U. S. Navy Department, it was reported, in advertising for bids on 100,000 bbls. of cement, had specified that prices quoted must be below the existing market level. As predicted in an earlier issue, the stronger companies sat back and let the price cutters load up on this unprofitable business.

The freight car shortage was still a problem for these industries, due largely to the fact that the Railroad Administration had about 17,000 freight cars which had never been used. These cars were built at war prices, and the railroads refused to pay prices which were far higher than they had been used to paying.

That the buyer's market had arrived was evident from a lead staff-written article entitled "Pleasing Customers." The writer stressed the importance of giving customers service, especially large contractors who might otherwise decide to open their own quarries or pits. It was pointed out that sand and gravel producers should not charge for wash water, and that producers in general should not take orders on which they cannot make reasonable quick delivery.

One of the feature plant stories of this issue described the Richmond, Ind., gravel plant of the Greenville Gravel Co. (now the American Aggregates Corp.). This was the newest of ten plants operated by that company in Ohio, Indiana, Michigan and Arkansas. The president then, as now, was F. D. Coppock, who had started in the sand and gravel business 18 years before with only a wheelbarrow and a shovel. This plant, like those before it and most of those since built by the company, incorporated many of Mr. Coppock's original features of design.

A feature of this plant was the large bin storage of 75 to 80-carload capacity. An apron feeder from the track hopper to the main plant conveyor was then a novelty. Disc crushers and triple-jacketed revolving screens were used, as they have been in the company's plants until recent years.

Association activities were apparently at a low ebb. Various items described more or less routine matters such as the preparation of cost sheets by the Illinois Sand & Gravel Producers' Assn., the announcement of the mid-summer convention of the Ohio Sand & Gravel Producers' Assn., and an article on the functions of a trade association. There was a detailed report on a meeting of the Lime Association at which the theme was how to extend the use of lime.

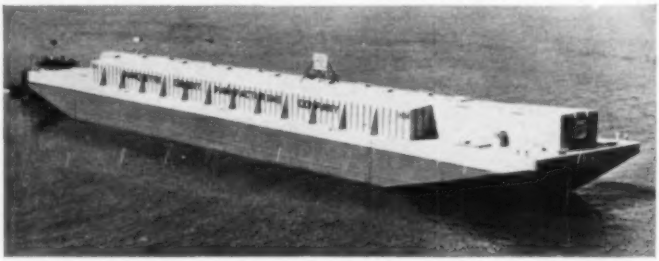
Marquette Gets New Barges With Special New-Type Bow

Marquette Cement Manufacturing Company's new barges are equipped with the new, revolutionary Ingalls bow, in addition to unusual features for loading and handling bulk cement. The Ingalls Shipbuilding Corporation of Birmingham, Ala., is the builder.

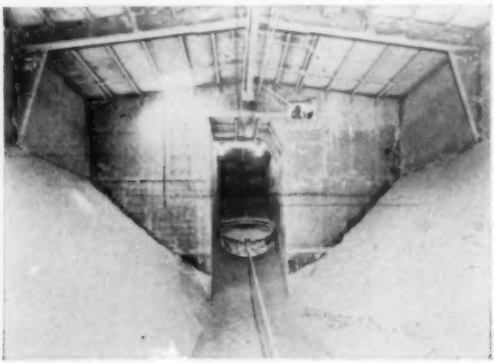
Engineers of both companies cooperated in planning the design of the barge, and Ingalls technicians completed the hull design and structural framing and incorporated the new Ingalls bow. With this new raked-end design, the barges—195 feet long, 35 feet wide and 11 feet in depth—are capable of being towed at speeds as high as 12 m.p.h.

This new type of bow shows a marked improvement over the conventional "spoon bill" type; owners have reported a 50 percent increase in ton miles of cargo carried. The new bow was pioneered and developed last year, based upon tests in the experimental naval tank at the University of Michigan, and is now being used extensively in barges built by the Ingalls company.

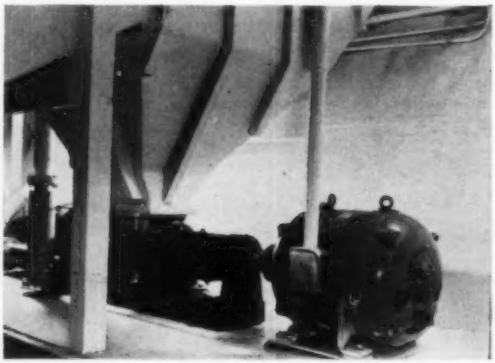
Other outstanding features of the barges built for the Marquette Company are those for loading and handling the cement. For loading, bulk cement is allowed to flow through pipes connected to openings in the roof of the deck house. The cement is removed from the barges by pumping. The Fuller-Kinyon pump functions in a manner similar to the regular centrifugal type used in pumping liquids. The pump is fed a constant flow of cement from the hopper, which in turn is filled by a Sauerman scraper system in the cargo hold.



• This new cement barge, built for Marquette, is designed to effect speedier handling.



• An interior view, showing a scraper bucket picking up cement.



• A motor-driven pump is emptying one of the new barges.

WASHINGTON NEWS LETTER

By S. HERBERT UNTERBERGER

FINALLY, the Administration appears to have admitted that there is no immediate inflationary danger. This was a grudging admission. It means, of course, that the President's anti-inflationary program which was pushed with such vigor last January is now gathering dust on the shelf. There are still a few die-hards around town who keep insisting that the government needs to have stand-by controls "just in case." But they are voices in the wilderness.

Two Views on the Economic Future

What has taken the place of the discredited Administration position that the worst inflation is yet to come? Really, two things have developed. First there is the official Administration position. It goes this way. While inflation is not a danger at present, one never can tell when it will again develop into a serious threat. On the other hand the deflation which we have been observing for many months is nothing more than a healthy readjustment. There is no real danger that it will develop into a depression or even a recession. No special action is required to counter it. After the readjustment is over the country will have a healthy prosperity for many years.

This optimistic attitude, that all will come out well in the end, has prevented them from seriously considering the opposite possibility. As a matter of fact if, at this time, a high Administration official were to make a speech in which he expressed concern about the economic future he would, no doubt, be severely censured. It might even cost him his job.

In contrast to this official attitude, there are some in Washington who are very concerned that the situation may not be so rosy. It is not that they expect a severe depression. It is just that they are worried that if what we are now experiencing should begin to look serious, we are just plainly unprepared to cope with the problem. Few have done any thinking about what to do in such an eventuality. Even fewer have done any actual planning. Those who have been doing some planning have been doing it surreptitiously. If they were caught, they would certainly be guilty of not following orders. Furthermore, if they were using some of their staffs to work on the preparation of anti-depression plans they might be guilty of other violations. This is, because no bureau has received any appropriations (except perhaps the President's Council of Economic Advisors) to make such studies and hence, to do such planning, they must be using funds appropriated for some other purpose.

Such diversion of funds is nothing new in Washington. Just such surreptitious planning was going on prior to our entry into the war. Practically every government agency was either engaged in it directly or indirectly to the extent of having lent some of its personnel for the purpose. Had this not been done, when the catastrophe of Pearl Harbor was upon us, we would certainly have been more woefully unprepared than we were.

Thus, there are plans being developed to be used if our present difficulties really become dangerous. But they are being developed in odd corners around town and are completely uncoordinated. Theoretically, coordination should be done by the White House or by some agency designated by the White House. If anyone is responsible for such coordination at the moment it is Clark Clifford, the President's Counsel. While it has been reported that he is concerned about the problem and would like to see some overall planning done, he has made no active efforts in that direction.

Public Works the Ready Answer

Press a government official about what he would really do if the present "dis-inflation" turned into a depression and he is likely to say that we would engage in a large scale public works program. The point has been made frequently that a public works program can not be put into effect overnight. If the "boondoggling" type of WPA program is to be avoided, plans, blue prints and even specifications must be available. Should the time come when such public works programs are desperately needed, those for which blue prints and specifications are available will be put into operation first. This will happen whether those particular projects are the most necessary or not—just because they are ready to go.

Which projects are they? Part of the answer is provided by the Army Engineers. Their representative recently told a committee of Congress that the national flood control program now includes nearly 1000 projects, estimated to cost seven and one-half billion dollars. So far Congress has only appropriated two billion dollars for this purpose. This leaves a large shelf of projects which could be tapped if necessary.

The Federal Works Agency estimates that it has a billion dollars of State projects blue printed. In addition there is two billion dollars worth of Federal construction planned and the states and cities appear to have another billion dollars worth planned.

But this is an insignificant amount by comparison with recent estimates that 100 billion dollars could be expended profitably on public works. The most crying need is for school construction which has been falling for almost twenty years. In contrast, the birth rate has risen by 60 percent from the pre-war level. There is already serious overcrowding and this is sure to get worse in the future. Furthermore, if the economic situation were to deteriorate the school population, particularly in high schools, would rise because there would be no employment opportunities. While there are no very detailed plans available, it would appear that school construction would be in for a boost.

Hospital construction similarly is well behind the need. And in this field there has been some advance planning. The biggest boon to hospital construction would occur if national health legislation were to pass. While that seems unlikely now, should the economic situation get worse so that many more people could not afford adequate medical care, the pressure for such legislation might be irresistible.

Many large public works projects have been talked about for years but for reasons largely political, little or nothing has been done about them. The various Valley Authorities and the St. Lawrence Seaway Project come immediately to mind. These have been fought successfully for many years by the opponents of public power. The possibility of getting these projects through in normal and prosperous times is slim indeed. But, let there be an economic set

(*Continued on page* 84)

• Commercialores, Inc., new kyanite plant near Clover, S. C. The ore strike, in the background, extends about 600 ft. above ground.

• Three of the company's top men: A. R. Eckel, president; N. K. Karchmer, vice-president; and S. J. Beers, plant superintendent.

KYANITE EXPLOITATION

By Edward Brunenkant

Over Half a Million Dollars Has Been Invested for The Recovery & Processing of an Unusually Rich Ore Body of Kyanite by a Newcomer to the Nonmetallic Minerals Field, Commercialores, Inc.

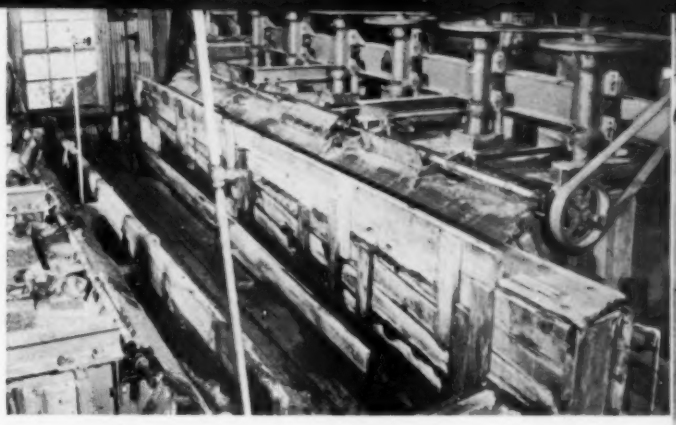
another ON THE SPOT report

ALTHOUGH kyanite is one of the oldest known minerals in the world and relatively common in its distribution, there are only two deposits in this country proven rich enough for commercial exploitation. Until recently, the bulk of kyanite, a valuable source of alumina for the refractory and ceramic industries, was shipped in from abroad. Today, however, foreign suppliers are meeting stiff competition from a new American company, Commercialores, Inc., organized in March, 1947, for the exploitation and processing of an unusually rich deposit of kyanite located near Clover, S. C. Ore from this deposit assays around 30 percent kyanite, as compared to 5 percent recoverable $Al_2O_3SiO_2$ formerly mined by another company (now defunct) in North Carolina. In addition to the comparative richness of the ore, more than 5,000,000 tons of which have been definitely proved, the formation of the ore body permits open quarry recovery—a factor calculated to give the company an added economy.

Commercialores, Inc., has invested nearly a half million dollars in its plant at Clover. Active construction of the plant was started in August of 1947, and the first shipments of the finished product were sent out in June, 1948. Full production schedules were reached by November of the same year.

The kyanite occurs in Henrys Knob, a hill formation which is an irregular lens of quartz-kyanite schist running north and south and dipping about 80 degrees to the east. At the surface the strike is visible for about 600 ft. and the foot wall has been completely eroded, showing the irregular deposit. Impurities include FeS_2 which to a large extent has been oxidized; rutile; and low percentages of other materials.

The plant is located at the southern tip of the ore body, and the quarry was opened at the northern tip so that the road from the quarry to the plant could be held to a grade not to exceed 20 degrees. The present working face of the quarry is about 30 ft. high. Drilling is done with Ingersoll-Rand Jackhamers using Timken bits and Rock Bit Sales carbide-tipped 2-point bits. Because the rock is extremely hard, it is impossible to drill to any reasonable depth with ordinary steel bits. Even with carbide bits, only about 35 ft. of hole can be drilled per bit. At the present time all drilling is done dry, but in the near future wet drilling will be introduced which, it is hoped, will effect substantial economies. Air for drilling is supplied by a Chicago Pneumatic stationary compressor. About 110



• A 6-cell flotation making a rougher kyanite concentrate. Ratio of concentration is 5 to 1; ph of tails 3.0.

• Right: A 6-ft. steel cone-bottom bagging bin.

lbs. pressure is maintained in the 2½-in. pipeline.

About 14 holes are drilled and shot at one time, using du Pont 40 percent ammonia dynamite. Because the formation is heavily seamed, the rock breaks out in extra-large boulders requiring large amounts of secondary blasting. The shot stone is loaded into an International K-7 3-cu. yd. dump truck by a ¾-cu. yd. General diesel shovel.

Stone from the quarry is dumped onto a Chain Belt 8-ft. by 42-in. apron feeder driven by a No. 4 American speed reducer connected by V-belts to a 3-hp. motor. This apron conveyor regulates the rate of discharge into a 24- by 36-in. Farrel-Bacon jaw crusher set at a 5-in. opening. The crusher discharge is conveyed on a 24-in. belt to a No. 6 Gates gyratory crusher powered by a 40-hp. squirrel cage motor. The primary unit is driven by a 125-hp. slip ring motor. For heavy starting loads or for any power requirement over 30-hp. the power company stipulates that these installations be driven by slip ring motors.

The gyratory unit produces a 1½-in. product which is discharged by gravity through a chute into a set of 16- by 42-in. Allis-Chalmers crushing rolls. Each roll of this unit is independently driven by a 20-hp. squirrel cage motor. The roll product goes on a 18-in. by 80-ft. belt to a 200-ton storage bin.

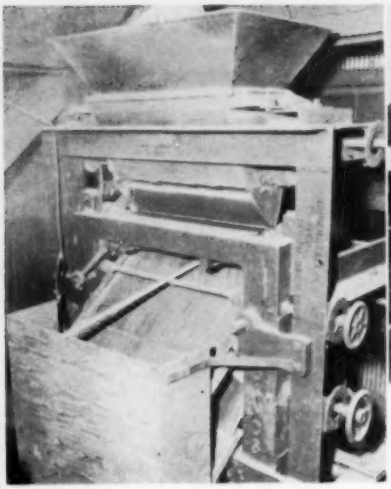
The material is reclaimed from the storage bins with an 18-in. belt equipped with a Reeves variable speed drive so that the belt doubles as a feeder for the Denver 4- by 10-ft. rod mill, which is equipped with a combination drum-scoop feeder; all feed is spouted into the feeder.

The rod mill operates in closed circuit with three 4- by 6-ft. Deister vibrating screens—a 3-in. Wilfley pump carrying the rod mill discharge to the screens, which are located on a level about 30 ft. above the mill. All of the screens are fitted with 24-mesh, .015-in. stainless steel cloth. Of the product passing through these screens approximately 5 percent will be retained on a 35-mesh sieve. The oversize is returned to the rod mill by gravity and the undersize flows to a 6-cell No. 15 Denver flotation machine for removal of the FeS_2. The flotation flow sheet was based on flotation tests made by the American Cyanimid Co. Flotation reagents are added directly to the cell. Tailings of the pyrite circuit flow to a 4- by 22-ft. Dorr classifier for desliming and separation of the 150-mesh material. The slime overflow goes to waste; and the sands flow to a 2-cell conditioner made especially for the company. It consists of 2 wooden tanks in which two 18-in. rubber-covered cruciform impellers revolve at approximately 250 r.p.m. Pump density in the conditioner is maintained at 65 to 70 percent solids. Additional reagents are added in this conditioner.

The conditioned pulp flows to a 6-cell No. 18 Denver flotation machine which operates as a rougher

• Left: Stone from the primary crusher is passed through this gyratory breaker for further reduction.

• Below: The extremely hard quarry stone is loaded into a 3-cu. yd. dump truck with a ¾-yd. diesel shovel.



• Left: The dried product is passed through a 3-roll magnetic separator, for removal of iron oxides.

• Above: Flotation concentrate is partially dried on a concrete-covered drainage area and then moved with a tractor equipped with a sand loader.

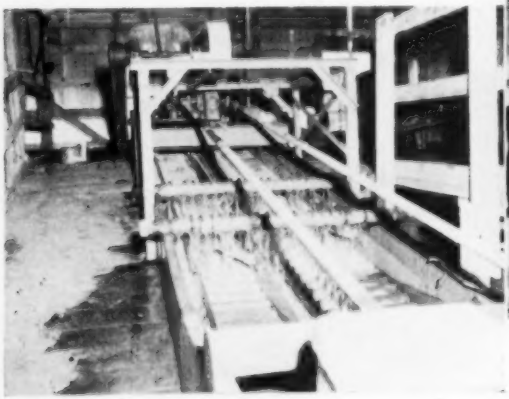
to concentrate flow by gravity to a similar flotation machine divided into two banks of three cells each. These serve as a cleaner and recleaner, respectively. Middlings from both cleaner and recleaner cells are returned to the rougher machine by means of a 3-in. Denver SRL pump. Tailings from the rougher go to waste. All the waste products from the plant are impounded behind a dirt dam built on the side of a hill.

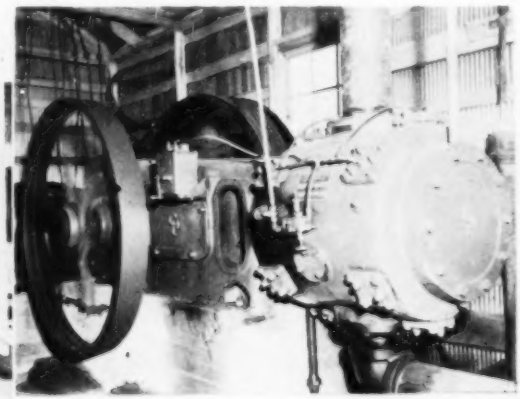
The final product from the recleaner cell flows to a second 4- by 22-ft. Dorr classifier for dewatering and the dewatered concentrate is dropped onto a concrete-covered drainage area. After a high percentage of the water has drained off naturally, the concentrate is moved into a small wooden hopper positioned over an 18-in. inclined conveyor by means of an International tractor equipped with an Ottawa sand loader. Moisture content is further reduced to almost zero in a 4½-ft. by 27-ft. single-shell rotary dryer fired by a National Airoil Co. rotary-type oil burner. The dryer is equipped with a No. 12 Type D American Air Filter Roto-Clone and Skimmer precleaner which provides exhaust draft and at the some time precipitates the dust. The dust collector is periodically tapped and joined with the dryer discharge. The discharge temperature is kept at 250 deg. F.

The dried product is lifted by a bucket elevator to a 50-ton steel bin with a cone-shaped bottom. Material from this bin is fed to two Type IR, 3-roll Dings magnetic separators for removal of iron oxides that have been floated off with the kyanite. The magnetic product is washed to waste while the non-magnetic is elevated to a 200-ton steel cone-bottom bin. This is the first salable product and is referred to as 35-mesh kyanite. It will analyze 58 percent alumina and 1½ percent Fe_2O_3. The overall ratio of concentration is 4½ to 1—or 4½ tons of material from the quarry to 1 ton of finished product. Flotation recoveries are about 90 percent while the recovery in the magnetic separation exceeds 95 percent. Most of the raw kyanite is sold to the refractory and ceramic trades. As a rule this company markets about 15 percent of its total production as 35-mesh raw kyanite. The remainder is either ground to a finer mesh or calcined or both. Standard grain sizes are produced by grinding 35-mesh product in a 4- by 16-ft. Allis-Chalmers pebble mill. This mill is lined with North Carolina granite

(*Continued on page* 160)

• The final flotation product is dewatered in a 4- by 22-ft. classifier.





• Compressed air for the plant is supplied by this stationary compressor.

Beach Deposit Supplies Material for Blast and Filter Sand Production

another ON THE SPOT report

A WAR-BORN industry, the production of blast sand exclusively for the United States Navy, brought the Monterey Sand Company of Seaside, Calif., into being in 1944.

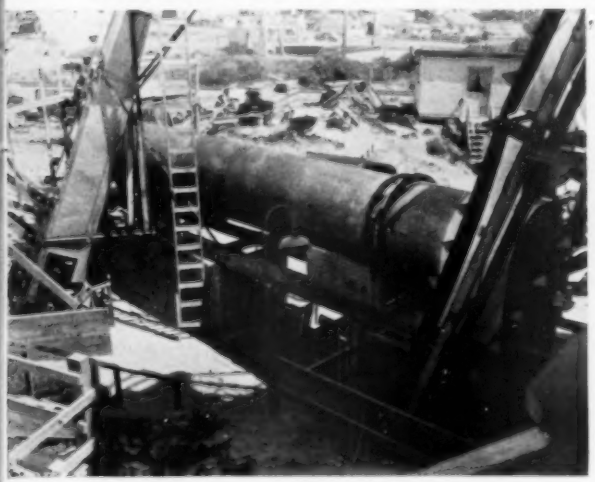
Facing a slackened demand at the end of the war, the company installed additional equipment to produce a wider variety of industrial sands. Today it is one of the few operations of its kind on the Pacific Coast, and production is being maintained at capacity much of the time. It is now producing sand of two types—for blast and filter purposes. The Navy continues to be a good customer, but the greater range in sand sizes enables the company to meet the grain-size blends specified by various industries. About half the product is shipped in bags, the remainder in bulk. Production is at the rate of 120 tons per 8-hr. day.

The deposit and plant at Seaside are located on Monterey Bay, and the raw material is harvested from the beach. A Sauerman cableway, its 1½-cu. yd. bucket pulled by a Clyde 2-drum cable hoist, digs the sand from below the surf, building up a reserve stock pile about 150 ft. from high-tide level on the beach. The quality and gradation of the sand required varies from time to time, being least desirable during stormy weather when high waves pound the beach, so that the cableway operates only intermittently. The storage pile is maintained at sufficient size, however, to assure a constant supply of sand for processing.

• At the Monterey Sand Company, Seaside, Calif., preliminary preparation of the sand is done at the beach plant. Cableway masts and the storage pile are shown at the left.

Preliminary preparation is done at the beach plant. A recovery belt operates in a tunnel beneath the stock pile, carrying the sand up to a vibrating screen and a set of rakes where any dirt, briny coatings, and surplus fines are removed by washing with fresh water. After this primary treatment the sand is stored

• Right: These two enclosed screens size the finest sand fractions. Below, right: The conveyor from the blending bins enters the sacking-and-loading building. A jack-leg bin (right) loads the special trucks which haul blast sand for the Navy.



• Below: The 5- by 30-ft. rotary dryer. At the left is the feed elevator; at the right dried sand is elevated for sizing.

• Packaged sand is weighed into paper bags and the bag mouths are sewed shut with the machine at the right.

in two bins for loading to 4-cu. yd. dump trucks that carry it to the main plant about a mile away.

The trucks discharge to a 200-ton plant hopper from which a short conveyor and elevator feed the sand to a 5- by 30-ft direct-heat rotary dryer. The dryer is fired by twin natural-gas burners.

The dried sand is then elevated to the sizing-and-storage building, where three vibrating screens and a pair of Orville Simpson Rotex units make the separation, spouting the sized gains into 7 blending bins arranged in line. The bins have a total capacity of about 500 tons, and grain size of the finished sand ranges from a maximum of 6, to a minimum of minus-30-mesh. Any plus-6 material is wasted.

A 24-in. by 140-ft. belt conveyor runs beneath the bins to blend the sand and deliver it to the sacking-and-loading building. The four top sizes, from 6 to 20-mesh, make up the blast sand, while the remaining three sizes, from 20-mesh downward, are marketed as filter sand.

Sacked sand is weighed into multi-wall paper bags and sewn by machine. The Navy takes its requirements in bulk. Special 4-compartment tank trucks carrying a 22-ton load, owned and operated by a contract hauler, make deliveries on regular schedule to the numerous Navy yards in the San Francisco Bay area.

The Monterey Sand Co. is owned by R. E. McDonald and Charles Lissman. Mr. Lissman had been engaged in sand-and-gravel production for many years at Sacramento, Calif., prior to the formation of the present concern. He actively supervises plant operations at Seaside.

Washington News Letter

(From page 79)

back and, under the guise of public works essential to keep the economy going, these are very likely to become realities.

This is a very inadequate kind of preparation for a depression which if it were to develop with the fury of 1929 to 1933 would, this time, seriously threaten our whole democratic way of life. By way of just a single example, the projects which might be available as a result of this haphazard planning, might not be in the same place, or even near, where the unemployment occurs.

Public Works and the Pit and Quarry Industries

The fact that public works appears to be the anti-depression device upon which principal reliance will be placed is of special significance to the Pit and Quarry industries. These industries constitute a large part of the materials which go into public works construction. This may be looked upon by the pit and quarry industries as a special blessing. When the government does move, it is likely that the pit and quarry industries will be activated while others are still languishing.

There are, however, several ifs and buts in this. First of all, the government has to move. If it is so laggard in coordinated planning, it would be too much to expect that it would move with any real rapidity should difficulties develop. Furthermore, it can not be assumed that so long as public works will expand, pit and quarry establishments only have to sit back and wait for the orders. Quite the opposite, it will certainly be necessary to know where the orders are coming from and to be there to get them.

In this connection, it is important to note that some of the projects mentioned are likely to be Federally controlled and operated, such as those of Army Engineers and others which will be managed by the Federal Works Agency. On the other hand, there is a developing tendency for Federal funds to be granted to the State or municipalities for local administration. This is likely to be the situation with respect to schools, hospitals, airports and highways.

If business men in these industries want to share in government programs which are bound to follow any economic downturn, they would probably be well advised to cultivate their contacts and relationships with all levels of government.

Wagner, Morris & Wagner, a newly-formed co-partnership in the Illinois Valley area of Oregon, have opened a new portable stone plant near Cave Junction.

St. Paul Firm Wins Contract For $1,500,000 Gravel Job

S. T. Harrison, former superintendent at the Auxvasse Quarry Co., south of Auxvasse, Mo., now connected with the J. L. Shiely Company of St. Paul, Minn., submitted the lowest bid for a $1,500,000 gravel job in connection with the construction of the Garrison Dam near Bismarck, N. D., for which a contract was signed recently.

Mr. Harrison is bringing in a gravel plant from Wyoming and readying it for operation at a point 40 miles north of Minot, N. D. He will also superintend the building of four miles of railroad, a generating plant, and a complete telephone set-up on the project, all scheduled to be in operation on July 15.

Castro Valley Rock Company, for years located on Castro Valley Boulevard, Hayward, Calif., is now operating in a new location. The old site, exhausted of its rock, will be taken over by the state for a freeway right-of-way. The new quarry is at Bridge and Gail Streets, where crushing plant and other equipment is installed.

White Sands National Monument in New Mexico near El Paso, Tex., is the world's largest field of pure gypsum. The snow-white, rolling dunes of pure gypsum, are driven eastward by prevailing westerly winds at the rate of a few feet a year.

Screenings

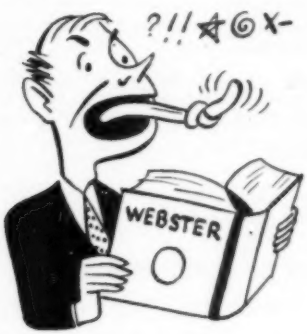
by William M. Avery

UNDERSTAND the Corps of Engineers is experimenting with a process for fusing small rocks together in order to make big rocks. We had it figured out that they would send the big rocks to various Federal penitentiaries, where the stir birds would bust 'em up and send little ones back to the Corps to be fused into big ones again, and so on *ad nauseum*.

Seemed such a plausible closed circuit for the Army to get involved in, that we felt a definite twinge of disappointment when we learned that the fused blocks will be used to reinforce earthen dams. If the manufactured boulders don't pan out in this service, perhaps the Corps will give *our* plan a whirl.

Sure Test

ACCORDING to the publishers, the longest word in Webster's new dictionary is pneumonoultramicroscopicsilicovolcanokoniosis. It's a



lung disease which is happily just about as rare as are people who can pronounce it. If you can stumble through it without taking a breath, it's a cinch you "ain't got it."

Gold Under Them Heels!

NOT long ago we were speculating idly on the momentous question of what kind of aggregate would be used for the proposed paving of Easy Street in San Diego. We opined that they'd stage a raid on Fort Knox.

Now we've latched onto a companion item from Reno, Nevada, where it seems they've just paved Douglas Alley, located in the heart of the downtown gambling club district, with $4 quartz ore. We have

a hunch that quartz assaying no more than $4 a ton in gold won't make a notably glamorous pavement, but at least it'll give the rubes something to gawk at after the gamblers have taken 'em to the cleaners.

Snakes Alive!

WE have proof at last that the concrete masonry unit has come of age. An item from Bellows Falls, Vermont, reports a slight variation on the hardy perennial about the frog (snake, toad, or what have you) found alive after 19 years imprisonment in a wall; this time the critter turned up in a concrete block.

Maybe it wouldn't be a bad idea if block manufacturers would make it their practice to send along a reptile of some sort with every thousand units delivered, including instructions for entombment. In a few years the press service wires would be humming with reports of reptilia found in masonry unit walls all over the country, and pretty soon the public would get the idea that no self-respecting reptile would dream of being found alive in any other kind of wall.

Commercial?

AGRICULTURAL limestone received a plug not long ago from a wholly unexpected source. Little Orphan Annie, probably the gabbiest character that ever got into a comic strip, prattled away for five consecutive days about using lime on impoverished farm land. We're not sure just how much influence Annie has with her readers, but it *might* be worth while for one of the agstone associations to put her on the payroll. Maybe, though, the associations are way ahead of us.

R. I. P.

NOT long ago, in commenting on the curiosity that motivates our species, this department stated that if somebody circulated a rumor about an unidentified body in the foundation of Grand Coulee dam, the authorities would probably start dismantling operations at once to find out who the guy was. A few days later we received a press clipping telling about an unidentified workman who was entombed in fresh concrete when a form burst on the Quebec side of the new McConnell Lake dam project.

So far as we can find out, the engineers went right on with the pour, which more or less explodes our theory. They probably figure they're doing enough for the guy by pouring several million cubic yards of concrete for his head stone.

Objective

RECEIVED a clipping the other day from the Millbank, South Dakota, *Review* in which we find ourselves referred to as the *Harpers* of the trade magazines.

This is a nice, and we're sure, entirely deserved compliment, but we aren't going to be entirely satisfied until we catch somebody referring to *Harpers* as the PIT AND QUARRY of the literary magazines.

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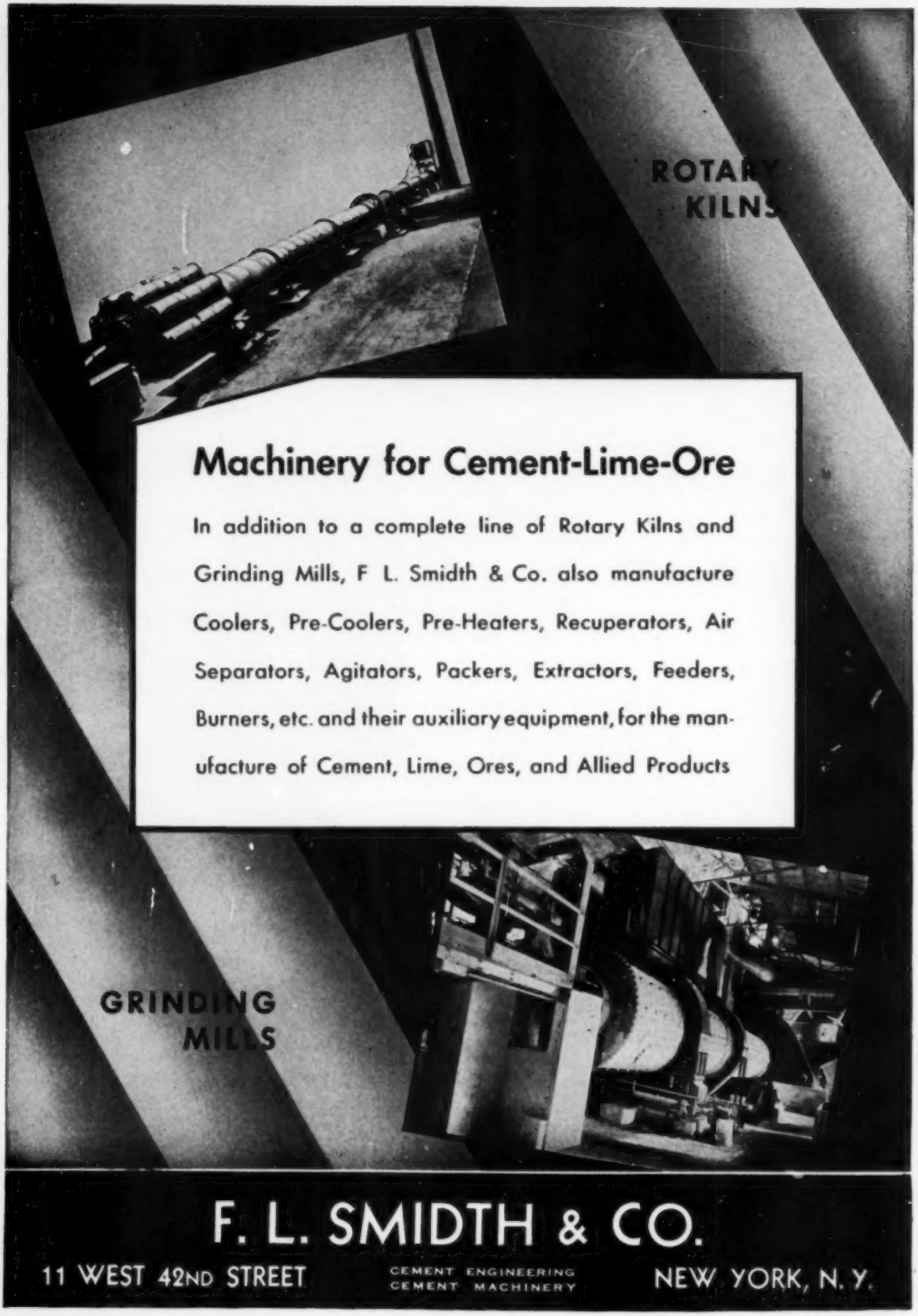
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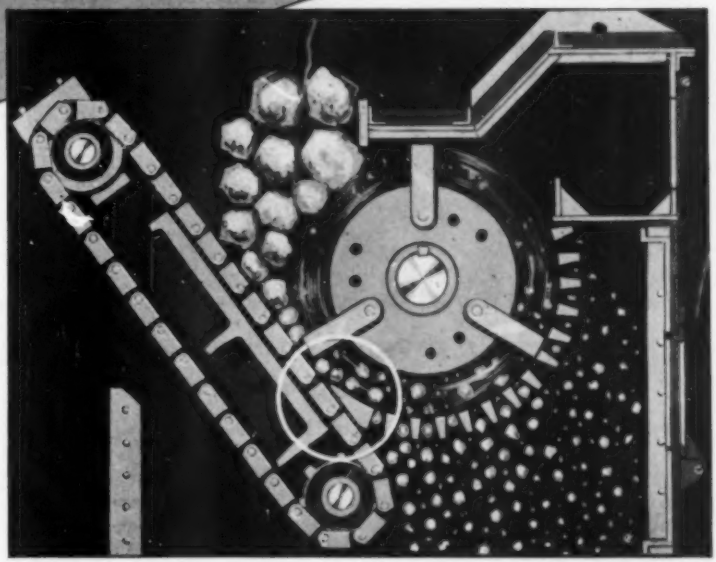

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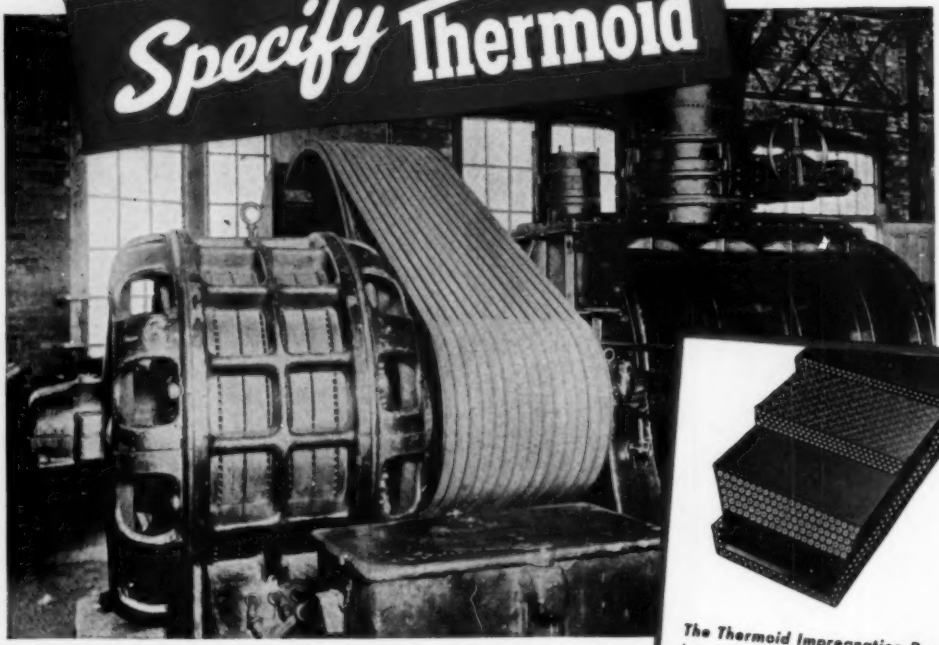

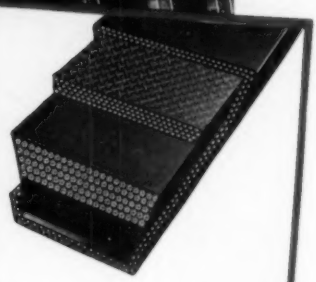

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The Thermoid Impregnation Process insures a deeper penetration of rubber between the threads of the yarn, which encases each individual strand with protective rubber. The rubber acts as a sheath between the strands and prevents the destructive abrasion action as the product is flexed in use. To obtain the required rubber penetration, the twist of the yarn must be to exact specifications. With the yarn twisted too tightly, proper penetration of the rubber compound is impossible. This condition produces abrasion, causing premature failure. On the other hand, if the yarn is twisted too loosely, the product lacks tensile strength. Thermoid has discovered the optimum twist of the yarn which assures maximum rubber penetration and greatest strength. The development of Thermoid Impregnation Process is another step forward in Thermoid's planned program of product improvement, assuring maximum service and lower operating costs to industry through the use of Thermoid Industrial Rubber Products.

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Marquette Cement Alters Bottoms of Storage Silos

By MALCOLM D. CULVER
Maintenance Foreman

another P-Q exclusive

WHEN the officials of our company decided to alter the bottoms of the I. C. storage silos in the same manner that we had previously altered silo No. 22, we recognized that it would mean a total expenditure of $171,000.00 and the handling of 15,200 cu. yds. of material, plus the fabrication and erection of 171.5 tons of $\frac{3}{16}$-in. plate into conical liners.

We at Oglesby recognized that if we could devise a rig that would form a concrete cone and eliminate the need for the $\frac{3}{16}$-in. plate liners we could make a considerable saving.

We worked on the theory that if you had a 5-gallon jar and desired a concrete conical bottom in it you would look for a proper shaped trowel and with a rotary motion you would trowel the bottom into the desired shape. So with this thought in mind we set out to make a rig that would deliver the material to the place desired and trowel it or act as a revolving slip form to place it into the conical shape. So we built what you might call a skip hoist tower that bent at the proper point to an angle of 52° 30′ which is the pitch required for the cone. The skip, which has a capacity of $\frac{1}{3}$ cu. yd., is hoisted by means of a drum and cable which is powered by a 5-hp. motor through a D. O. James reducer and controlled by a reversible controller. We have conical plates which attach to the skip hoist and serve as a movable form for the concrete cone.

This skip hoist is supported by wheels which run on a circular track which is attached to the $\frac{3}{16}$-in. plate hopper at the bottom of the silo. At the top of rig we have two

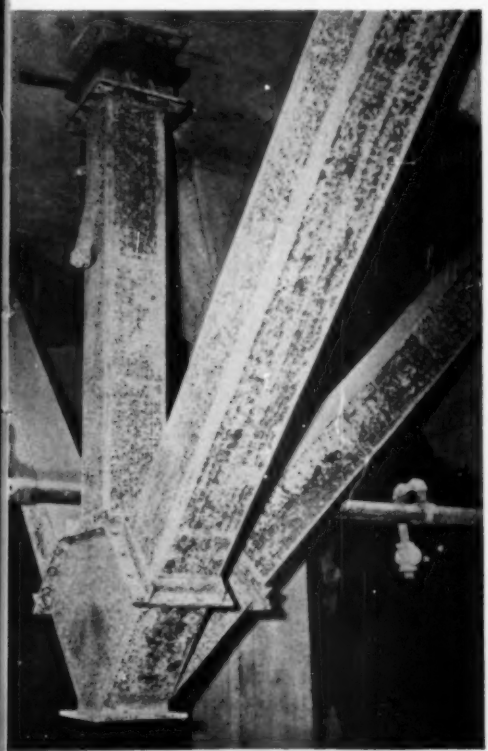
• The skip hoist is supported by wheels which run on a circular track attached to the plate hopper at the bottom of the silo.

rubber-tired truck wheels which allow the hoist to run around the vertical walls of the silo. The vertical part of the hoist which goes down into the basement where material is loaded does not quite reach the floor but is free to move in relation to the center to compensate for any irregularity there might be in the silo walls.

The rig is rotated by a small pneumatic air hoist with single blocks and cable attached to the circular track.

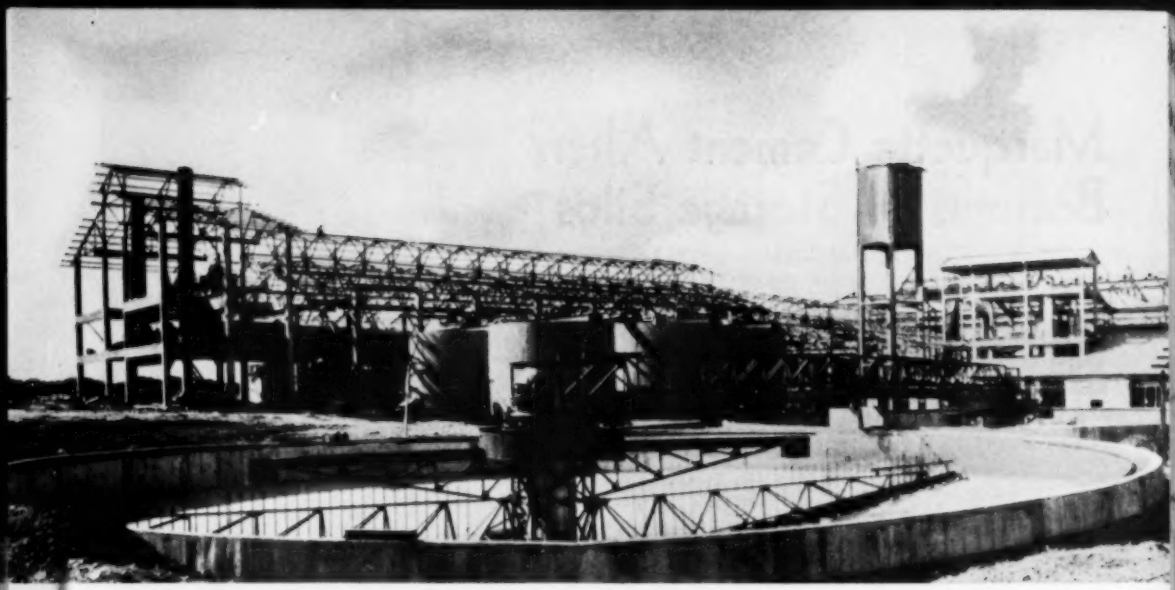
Feeling that we had the solution as to how to place the material we

(*Continued on page* 100)



• Left: Original chute equipment under the silos. Note that valves in this set-up were inconveniently located at the ceiling.

• Right: Present discharge cone and valve which has been designed in conjunction with the skip hoist tower, thus eliminating the 3/16-in. plate liners and effecting a material savings. Here the single control valve is located at the bottom.



Over-all view of the plant at Barranquilla, Colombia.

Cementos del Caribe

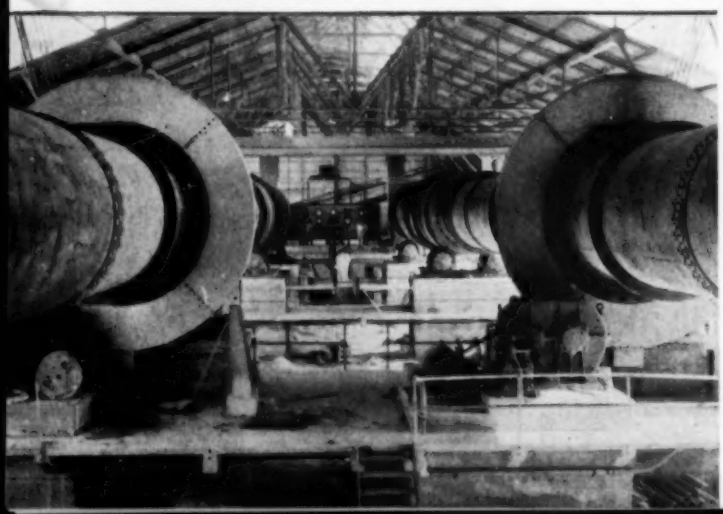
BUILDS MODERN PLANT AT BARRANQUILLA, COLOMBIA

AN IMPORTANT and long anticipated addition to South American cement production became a reality some months ago when operations began at the Barranquilla, Colombia, plant of Cementos del Caribe. This completely modern two-kiln plant is now in regular production, and its output is said to approximate 350 metric tons (about 2,050 bbls.) per day. It is located on the Magdalena River some 4½ miles from Barranquilla.

The Barranquilla plant is almost an exact duplicate of the Cemento Panama plant described in these pages three years ago.[1] There are, however, some minor differences in secondary crushing, and in the size and type of classifier used in raw grinding; the Caribe plant, moreover, was designed for operation with purchased power, whereas the Cemento Panama installation has its own diesel generating plant. Raw material reserves for the new Colombian production unit are thought to be virtually inexhaustible. The Caribe plant is said to be the first in Colombia to use closed-circuit systems for slurry production and for grinding clinker.

Raw materials are crushed in two stages. Quarry-size material is reduced to minus 5 in. in a 42- by 40-in. Allis-Chalmers Superior Blake-type jaw crusher, fed by a 48-in. by 18-ft. heavy-duty apron feeder. The product of the primary crusher is conveyed by belt to a 4- by 8-ft. double-deck Ripl-Flo vibrating screen. Oversize from this screen discharges into a Dixie No. 3640 nonclog hammermill, while the fines drop into a bin and rejoin the hammermill product.

1. See Baxa, E. H.: *First Panama Cement Plant to Be Ultra Modern in Design*, Pit and Quarry, July 1946, page 83.



Kiln building, showing the two 300-ft. kilns.

The crushed material is delivered to a 24-in. belt conveyor supported on the storage yard wall. A hand-operated, power-driven tripper permits the product of the crushing plant to be discharged into the raw mill feed bins or into the storage yard at any point in the length of the conveyor. Bin capacities and other facilities in the storage yard are based on operating the overhead crane only one shift per day.

Merrick 24-in. by 8-ft. Feed-o-weights are used to withdraw the raw materials from their respective bins and deliver them to the grinding circuit. The raw mill is a 9- by 13-ft. Allis-Chalmers wet grinding ball mill charged with 90,000 lbs. of 1½- and 4-in. diameter balls. It operates in closed circuit with a 12-ft. wide by 28-ft. long Type QSFX Dorr classifier. This unit overflows into a sump from which the slurry is pumped to thickeners by either of two 6- by 8-in. Allis-Chalmers slurry pumps.

Two 100-ft. diameter by 12-ft. deep Type "SG" Dorr thickeners are used for thickening the slurry. These underflow to a 2-compartment sump, from which the slurry is pumped by two 4-in. Model "C" Wilfley slurry pumps. The thickener overflow is returned to the grinding circuit by gravity. Because of the large volume of slurry held in process in the thickeners, only four tanks 22-ft. in diameter by 20-ft. deep are required for the storage of finished slurry. Two tanks of the same dimensions are used for blending. Each of the six tanks is equipped with an Allis-Chalmers propeller-type mechanical agitator, as well as with air lines by means of which emergency agitation can be accomplished in case of a failure in the mechanical system.

After it has been approved as kiln feed by the plant chemist, the corrected slurry is stored in two 28-ft. diameter by 15-ft. deep kiln feed tanks. These are located in the kiln building under the feed end of the kilns. They are equipped with Minoque combination air-mechanical agitators. The slurry is discharged from the kiln feed tanks into a 2-compartment sump, from which it is delivered to the kiln feeders by two 3-in. Model "C" Wilfley slurry pumps. Ferris-wheel type slurry feeders are used for feeding the kilns, and these are synchronized with the kiln drives to assure a constant rate of feed.

Clinker is produced in two 8-ft. 6-in. by 10-ft. by 7-ft. 6-in. Allis-

Left: Storage building, with traveling crane in operation. Below: Secondary crusher and conveyor to storage building.

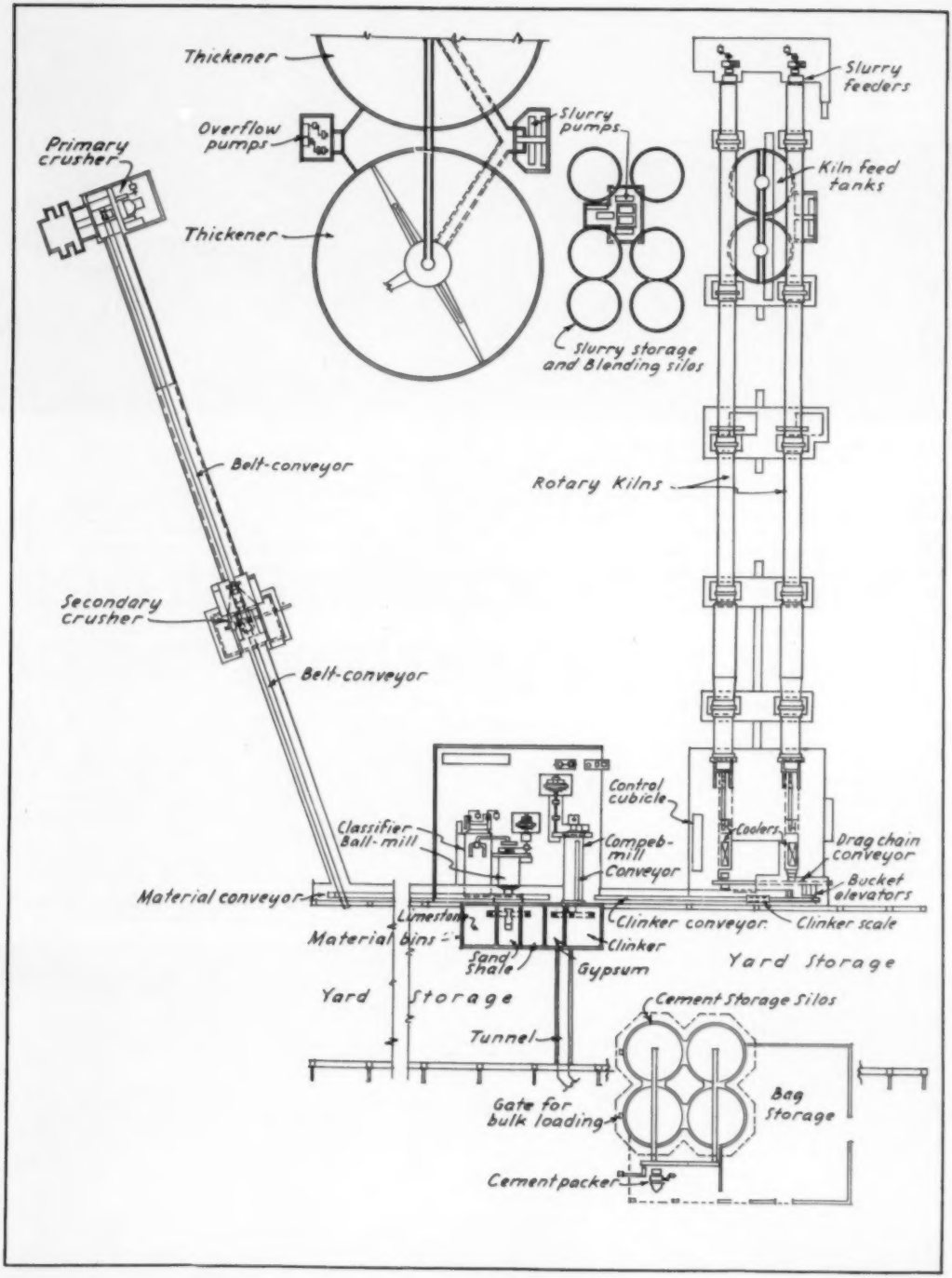


Diagram of Cementos del Caribe Plant

Chalmers rotary kilns which are 300 ft. in length. Each of these units has a burning zone 25 ft. in length, and an enlarged calcining zone 10 ft. in diameter by 34 ft. long. Each is supported on five carrying mechanisms, and each is driven by a 60-hp. d.-c. motor.

The kilns are fired with oil, preheated to about 250 degrees F. by tube-type primary heat exchangers. Steam for the exchangers is supplied by a 30-hp. Keewanee oil-fired Scotch marine boiler.

Each kiln is provided with a separate control cubicle containing automatic draft and oil-flow controllers; kiln burning zone, exit gas temperature, kiln speed and draft recorders; and such instruments as oil and primary air pressure gauges, ammeters for principal motors, a.-c. and d.-c. line voltmeters, and all pertinent push-button stations and speed controllers.

Hot clinker is discharged into 3-ft. wide by 50-ft. long Allis-Chalmers air-quenching clinker coolers, in which the hot material is conveyed slowly over grates by the reciprocating motion of the cooler body. Atmospheric air under slight pressure is forced up through the grates and the clinker. A hinged baffle wall divides the stationary upper housing of the cooler into two sections, so that the hottest air rising from the bed at the feed end of the cooler can be directed into the kiln as preheated combustion air. The clinker is cooled to within 100 to 150 degrees of atmospheric temperature.

The cooled clinker passes over a grizzly from which plus 2½-in. material is removed and hand broken. A chain-drag cross conveyor serving both coolers delivers the clinker to a No. 322 Type "R" gyratory crusher which reduces it to minus ½-in. This unit discharges into either of two clinker elevators, either of which can handle the combined output of the kilns, and these in turn discharge onto a belt conveyor which delivers the material to the clinker mill feed bin. The clinker may also be discharged from the elevators directly into the storage yard.

A 3-compartment 7-ft. diameter by 35-ft. long compeb mill, operating in closed circuit with a 14-ft. Raymond double whizzer air separator, is used for grinding the clinker-gypsum mixture into finished cement. Merrick Feed-o-Weights are used for withdrawing clinker and gypsum from their respective bins, and a manganese-steel screw feeder extending through the mill trunnion is used to inject the mixture into the preliminary grinding compartment of the compeb mill. The mill is driven by an 800-hp. synchronous motor direct-connected to the mill countershaft through a Type DL Cutler-Hammer magnetic clutch. It is arranged so that it may be operated either in open circuit or in closed circuit with the air separator. When the air separator is in use the material which requires additional grinding is returned to the mill feeder by a screw conveyor.

Approximately 3,500 c.f.m. of atmospheric air is drawn through the clinker mill to remove the heat which it generates. This cooling air, and air drawn from hoods over dusty material transfer points, is vented to the atmosphere through a No. 28 Sly bag-type dust collector.

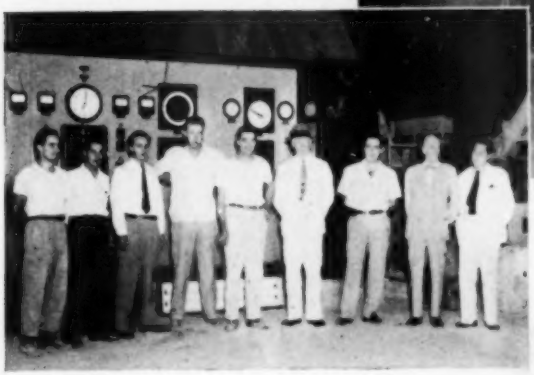
Finished cement flows by gravity from the mill or from the air separator into a Type "H" Fuller-Kinyon transport system which delivers the material to four 26-ft. diameter by 90-ft. high reinforced-concrete silos, each with a capacity of 10,620 bbls.

The packing section is fed by means of screw conveyors located under the silos and a bucket elevator which discharges into the feed bin. The layout is arranged in such a way that spillage and floor sweepings return to the cross screw conveyor by gravity. Although the present installation has just one St. Regis 4-tube packer, there is space for a second machine.

Each of the main silos has a steel cone bottom which permits all the cement in a silo to be withdrawn from one opening. Bulk loading is facilitated by the provision of a valve and spout in the sides of the silos.

The Barranquilla product, under the trade name Caribe Supercement, is already available in markets along the Atlantic Coast, and export possibilities are being studied closely. Dr. Carlos Duque S. is general manager of Cementos del Caribe, and N. Cardenas is chemist. The complete plant was designed by the Allis-Chalmers Manufacturing Co., which also supplied a major share of the equipment.

Above: Compeb mill which grinds clinker-gypsum mixture into finished cement.

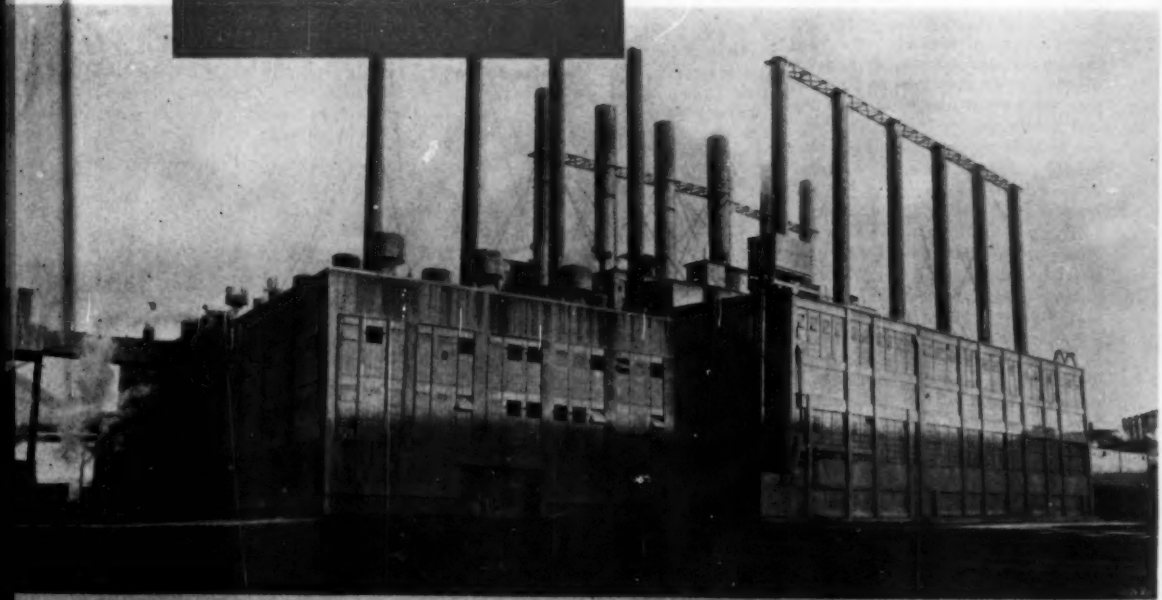


Left (left to right): Vicente Uribe, engineer; N. Cardenas, chemist; Dr. Carlos Duque, genl. manager; W. S. Fogelberg, erection engineer; E. H. Baza, engineer in charge of starting operations; E. Winsnes, Allis-Chalmers; Guillermo Perez, Cementos del Caribe; and Ernest Smith and Armando Orosio, Allis-Chalmers.

More Cement from Huron

Expansion program ups mill capacity 50 percent to 6,200,000 bbls. annually. Eighteen kilns now in full production.

By WILLIAM M. AVERY



• General view of the No. 2 kiln department at the Alpena, Mich., plant of Huron Portland Cement Co. Building at the left houses the four new 10- by 153½-ft. rotary kilns. Six older kilns in the building at right were installed shortly after World War I. For a more complete view of the plant, see cover of this issue.

• Center: The JOHN W. BOARDMAN of the Huron cement carrier fleet loading at the company's dock in Alpena.

• Extreme upper right (left to right): C. P. Harris, mill manager at Alpena, H. A. Browne, chief engineer, and H. Ripley Schamm, vice president in charge of operations.

another ON THE SPOT report

THE November, 1947, issue of Pit and Quarry (page 92) contained a somewhat detailed progress report of a tremendous expansion program then well under way at the Alpena, Mich., mill of Huron Portland Cement Co. When we revisited Alpena last December to obtain a first-hand report on the Fuller-Huron Airslide[1], we found the new facilities in full production and the work substantially completed except for a few minor details. Actually, the last of the four new coal-fired rotary kilns went into operation in May, 1948.

As stated in our earlier report, Huron's expansion program centered mainly around the No. 2 mill which was built shortly after World War I. The original mill at Alpena (now identified as No. 1 mill) was built in 1907. It consisted of eight 8- by 110-ft. kilns. The construction of No. 2 mill, involving six 10- by 153-ft. kilns, jumped the company's capacity approximately 150 percent. Although many relatively minor improvements were carried out during the period between the two world wars, there was no large-scale effort to expand capacity until the present program was launched.

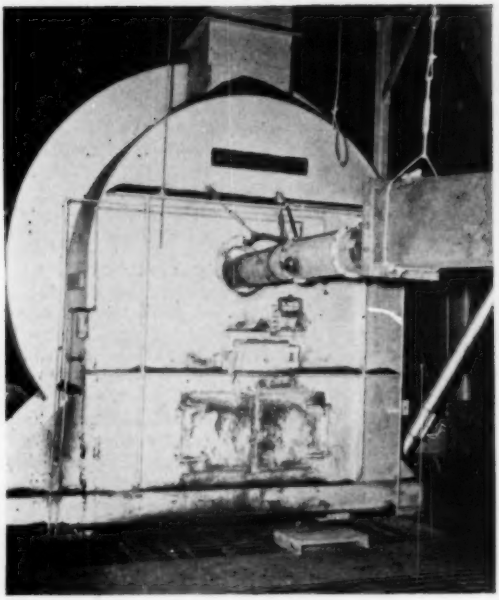
Now, with 18 large kilns in production, the Alpena mill seems to have a clear claim to the title of world's largest cement mill. The expansion program which is the subject of this report has already effected an increase of approximately 50 percent over previous capacity. The kilns are now producing at a rate of 6,200,000 barrels annually. Improvements now under way for the delivery of additional coal to the kilns are expected to further increase the kiln capacity by a substantial amount. In addition to the clinker and cement production capacity, installation of a new proportioning system, plus the tremendous increase in finish grinding capacity, has provided productive capacity for the manufacture of up to 20,000 barrels per day of Huron mortar cement.

To house the four new kilns, the company built a steel frame extension to No. 2 kiln room measuring 102 by 302 ft., with an average height of 47 ft. Each kiln is supported on two piers, and at the upper end the centerline is about 27 ft. above mill level. The all-welded shells have two riding rings and rolls and are set on a pitch of 3/8 of an inch instead of the former standard of 1/2 in. per ft. They are 10 ft. in diameter by 153½ ft. in length. Numbers 7 and 8 were built by Allis-Chalmers; 9 and 10 were supplied by Vulcan Iron Works. The linings consist of 100 ft. of 9 in. Olive Hill (or equivalent) fire brick, with the remainder high-alumina (70 percent) 6 in. brick. Dietrick suspended-arch housings are used.

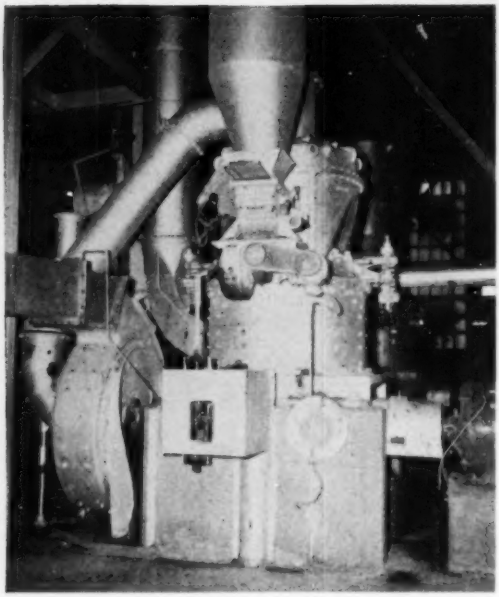
Numbers 7 and 8 are driven by 4-speed 50-hp. motors through Texrope V-belts to Falk reducers, which are in turn coupled directly to the main drive pinions. The available speeds on these two kilns are 72, 54, 36 and 27 revolutions per hour, but actual operation has established 54 revolutions as the top speed.

1. See Avery, William M.: *Meet the Airslide*, Pit and Quarry, February, 1949, page 62.

• Lower right: In this construction view one of the new kilns is already on its piers, another rests on timber cribbing, and two of the waste heat boilers are in position.



• Firing end of one of the new coal-fired dry-process kilns.



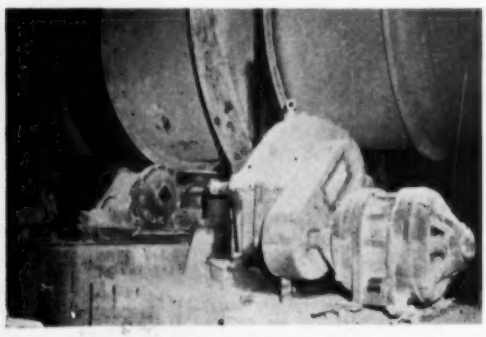
• The direct-firing bowl mills used for firing utilize hot air off the kiln hoods to dry the fuel.

The two Vulcan kilns are driven by two-speed (870-435 r.p.m.) 50 hp. motors. Through V-belts these motors drive Philadelphia herringbone reducers which are coupled directly to the main drive pinions.

Each of the new kilns is equipped with a 6- by 20-ft. Fuller grate cooler, and during the next winter the six older kilns in No. 2 mill will be similarly equipped. Fuller coolers were installed on the smaller kilns several years ago. The clinker from those kilns equipped with coolers is now discharged at around 120 degrees F. compared to 1900 or 2000 degrees before the coolers were placed in service. With less space needed for spreading out clinker to cool it, the existing clinker storage pit capacity has proved adequate for the increased burning capacity.

Coal for the new kilns is pulverized in Raymond No. 452 direct-fired bowl mills, using automatically-regulated hot air off the kiln hoods to dry the fuel. Each has Hagan automatic mill feed controls operating from the current input to the mill motors. The capacity of each mill is about 4 t.p.h.

As part of the general expansion program the coal handling system for No. 2 mill was completely revamped. A 132-ft. reversible shuttle belt now distributes fuel to a 55-ton coal tank at the firing end of each of the 10 kilns. An inclined belt has also replaced the bucket elevator and screw conveyors formerly used, and there is now no intermediate storage point. Tanks for the six existing kilns were enlarged from 27 to 55 tons capacity without shutting down the kilns. All of the kilns at Alpena have graded resistance plate type electrical precipitators designed and built by Huron. The units have a collecting efficiency of about 95 percent.



• Two of the kilns are driven by 4-speed 50-hp. motors through V-belts to reducers which are coupled directly to the main drive pinions.

For waste-heat utilization the new kilns have Wickes 1,000 hp. bent-tube boilers of a relatively new design. They generate steam at 200 lbs. pressure, and yield from 24,000 to 40,000 lbs. of steam per hour (each) when the kilns are operating at full capacity. Feed water is heated with Green fuel economizers.

Huron generates all the power for its own operations at Alpena, and in addition sells power to the Wyandotte Chemical Corp. The existing Allis-Chalmers turbines (one 10,000-kw. and three 5,000-kw.) were adequate to take care of the increased power demand resulting from the expansion program, but the plant was rather close hauled for steam until the new waste-heat boilers went into operation. There is as yet no definite program for the use of the excess steam generating capacity, but several possibilities are under consideration.

When we visited Alpena last December the new kilns were producing at the rate of about 52 bbls. per hour per kiln. Up until that time the company had not attempted to step up output to the maximum because of a minor bottleneck in raw grinding capacity. This condition has since been relieved, and the new kilns are now each producing at the

rate of about 60 bbls. per hour. Output of the older kilns in No. 2 mill has been increased to about 55 bbls. per hour per kiln.

In the Alpena mill all preliminary and finishing operations are performed together, the only division in the flow occurring in the kiln departments. Despite the whopping increase in kiln capacity, there have been surprisingly few major changes in the various other departments. Raw grinding capacity was increased in the main by carrying out a number of minor improvements. Correct feeding alone, made possible by the extensive use of F-H Airslides, resulted in much larger circulating loads on the mills, and yielded an increase in output of 35 percent. One new 7- by 26-ft. two-compartment mill was installed, bringing the total number of such mills in the raw grind section to nine. Liners in this new mill are of the Allis-Chalmers Lorain type, consisting of separate high-carbon rolled-steel lifters and liners. The new mill has a capacity of 29-30 t.p.h. It is driven through a 72-in. Cutler Hammer magnetic clutch by a 500 hp. G.E. synchronous motor. It operates in closed circuit with a 14-ft. Raymond air separator.

To obtain larger circulating loads in the older mills, grid bars were removed, and the plain division heads were replaced with slotted screens. Hardinge Feedometers have also been installed on all the mills in order to assure a known, calibrated amount of feed on each. Each of the raw mills has also been equipped with an American Type KD, size 45, Dustube dust collector.

The expansion of raw grind capacity was carried out without installing additional dryers or hammer mills. Output of the existing hammer mills was increased by installing scalping screens between the dryers and the hammermills, thus taking off between 40 and 50 percent of the material ahead of the hammermills. With the elimination of this bottleneck, and a nominal increase in operating hours on the dryers, there has been no difficulty in bringing output up to the requirements of the kilns.

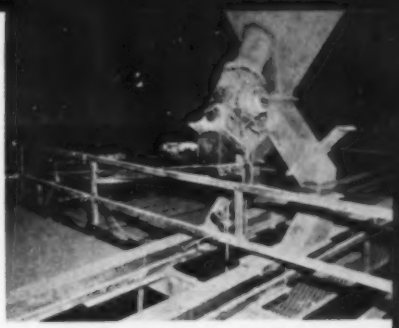
Finished grinding capacity has been increased to 24,000 bbls. of standard cement per day by the installation of 6 new Bradley-Hercules mills. These are used for preliminary finished grinding, and their product goes to a surge tank from which it is distributed to the 12 compeb mills in which finished grinding is done. The new mills are driven by 350-hp., 4000-v. squirrel-cage motors. Two of the units are equipped with Hardinge Feedometers and the others with separately driven horizontal disc-type feed tables. They are housed in a new 30- by 145-ft. steel frame building.

In the finished grinding conversion five new 14-ft. Sturtevant air separators were installed, bringing the total number of that make and size to 8. Each of these operates in closed circuit with a 7- by 24-ft. two-compartment mill. In addition there are two 16-ft. Raymond air separators, each operating in closed circuit with two 7- by 24-ft. three-compartment mills. American Dustube dust collectors have been installed on each of the finished grinding mills.

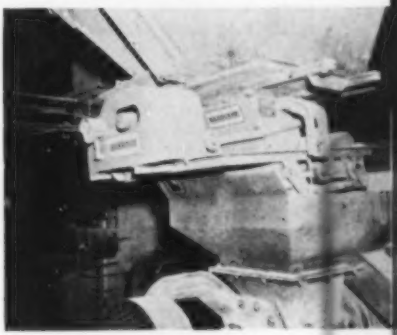
Although the F-H Airslide is not directly related to the recently completed expansion program, this revolutionary method of conveying dry, pulverized materials has played an important role in bringing the mill up to its present capacity. This is hardly surprising, since the device was conceived and developed at the mill in Alpena. Airslides are now used there for handling raw materials (including mill stream, air-separator tailings, and kiln feed), and for the handling of cement (including preliminary feed, air-separator tailings, and finished cement). They are also used extensively at the company's distributing plants, as well as for a unique unloading system recently installed in the Huron Transportation Company's bulk cement carrier S.S. *Samuel Mitchell*.

Over 4,000 ft. of Airslides in service at Huron's various plants are now conveying more than 40,000 tons of material per day. In connection with the expansion program alone some 900 ft. of Airslides were installed in circuits that would normally have required some other type of conveyor. Requiring only about 10 percent of the horsepower required by other types of conveyors of comparable capacity, the F-H Airslides now in service at Alpena represent a substantial power saving.

This company is also utilizing air to achieve a higher feed rate and better uniformity of feed on one of its kilns. The device used for this purpose is the Fuller constant-head air lift feeder for dry process kilns. It utilizes low-pressure (3-lb.) air to aerate the feed in a hopper, reducing the weight of the material to about 45 lbs. per cu. ft. The same source of air then forces the material under hydraulic head up a 5-in. diameter pipe, from which it flows into a box containing a screw conveyor. While the screw conveyor



• Upper Airslide in this view conveys separator tailings back to a raw mill, while two lower units each convey 50 t.p.h. of finished raw material.



• One of the measures taken to increase production in the raw grind department was the installation of constant-weight feeders on each of the 9 mills.

• Huron is now testing on one of its kilns this constant-head airlift feeder.

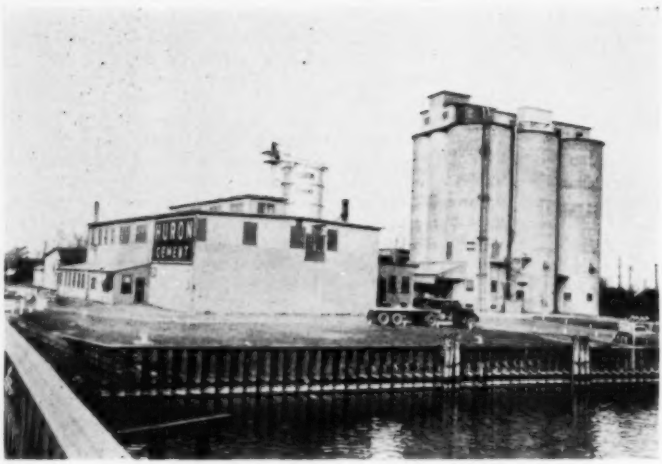
• Below: Six new mills of the type shown here have been installed for preliminary finished grinding.

feeds a uniform stream of material to the kiln, the excess overflows a weir in the box and drops back into the hopper.

Most of the output of the mill at Alpena is shipped by water to company-owned distributing plants located at Duluth, Minn.; Green Bay and Milwaukee, Wisc.; Alpena, Saginaw, Muskegon, Detroit and Wyandotte, Mich.; Toledo and Cleveland, Ohio; and Buffalo and Oswego, N. Y. The affiliated Huron Transportation Co. operates three lake steamers which haul cement from Alpena to the distributing plants throughout the lake navigating season. These three vessels, the *S. T. Crapo*, the *John W. Boardman*, and the *Samuel Mitchell*, have a combined cargo capacity of 20,000 tons. About two years ago the company completed an improvement program on its harbor and dock facilities at Alpena this included expanding and deepening the harbor, and constructing an entirely new breakwater and dock.

There is storage capacity at Alpena for 760,000 bbls. of finished cement, and for about 1,000,000 bbls. of clinker. In order to reduce storage at the mill, the company does some rail and truck shipping during the winter months.

Notwithstanding the expansion character of Huron's most recent program, all the work was planned and executed with the primary thought of improving the uniformity of the company's finished products. In progress at the moment is a major program in connection with the entire electrical system of the plant. Among other things this will include widespread replacement of switch gear, and extensive changes in power distribution to insure better continuity of operations.



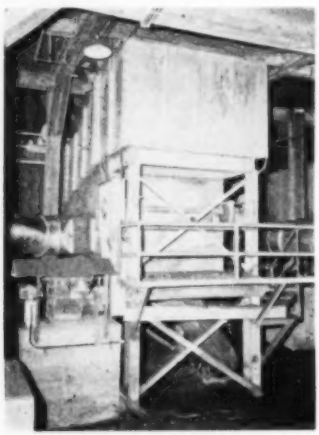
• Fairly typical of Huron's network of packing and distributing plants is this exceptionally neat setup at Saginaw, Mich.

Major improvements in the boat loading system, to speed up the loading of vessels, are well on the way to completion. A 150-barrel rectangular surge tank has been installed on the roof over the battery of 14 boat-loading bins. This surge tank will receive the output of three 10-in. Fuller-Kinyon pumps, elevating cement for vessel loading. The bottom of the surge tank is fitted with 14 Huron Airfeeders, discharging into 14 Airslides which distribute the cement to the desired individual vessel loading bins. For discharging cement from the vessel loading bins into the vessels, the bins are being fitted with Huron Airfeeders and Airslides for withdrawing and conveying the cement from the bins to 7 shuttle screw conveyors extending over the deck of the ships.

With the exception of certain structural steel work, all of the engineering work in connection with the program was carried out by Huron's own staff of engineers. The new buildings and coal galleries were detailed, furnished, and erected by the McDowell Company of Cleveland.

The Alpena mill staff responsible for this program consists of C. P. Harris, mill manager, W. G. MacDonald, mill superintendent, H. A. Browne, chief engineer, and A. C. Fowler, chief chemist.

• Working conditions in both the raw and finished grind sections have been vastly improved by installing dust collectors for each of the mills.



• One of the new 6- by 20-ft. grate coolers from which clinker is discharged at about 120 degrees F. All 18 of Huron's kilns are now equipped in this manner.

Marquette Alters Silos

(*From page 91*)

were confronted with the cost of 15,200 cu. yds. of concrete and started looking for a cheaper substitute. After tamping and testing for bearing value we decided to use the practically unlimited supply of clay that was in a hill on the job site. This clay is tamped for back fill with pneumatic demolition tools and then covered with 10 or 12 inches of concrete to form the surface of the cone. We feel that we will complete this job for slightly less than 50 percent of the originally estimated cost.

• This aerial view of the Halliburton mill site, looking toward the ship channel, was taken in mid-April. Raw materials will come in through a barge canal which will terminate in the storage area to the right of the stack. Cement will be stored in twelve silos now under construction along the channel.

Construction Work Well Advanced on Halliburton Mill at Corpus Christi

another ON THE SPOT report

AS the accompanying pictures indicate, construction work on Halliburton Portland Cement Company's mill at Corpus Christi, Texas, was well advanced when we visited the job site in mid-May. Most of the foundation work, involving the driving of more than 9,000 piles and the placing of some 30,000 cu. yds. of concrete, had been completed, and erection work was in progress on the two 9½-ft. diameter by 377-ft. kilns. Barring unforseeable delays, officials of the company predict that the plant will be in operation by November of this year. Work on the project was started just a year ago—in July, 1948.

The new company is owned and operated by Erle P. Halliburton, Sr., head of the Halliburton Oil Well Cementing Co., and his wife, Vida C. Halliburton. Construction work is under the supervision of a committee which includes Erle P. Halliburton, Jr., A. J. Anderson, James R. Dodds, Herbert V. Hughes and Ellroy King. All foundation work and machinery installation is being carried out by the MacDonald Engineering Co. of Chicago, under the supervision of that concern's general superintendent, L. E. Whitney. R. O. Bartholomew of Houston is consulting engineer for the project.

With the facilities now under construction the Halliburton plant will have a productive capacity in excess of 4,000 bbls. per day, and provision has been made in the design for a future increase of one-third without a proportionate outlay of additional capital. The plant will produce standard portland and high-early-strength cement, as well as high-temperature cement for oil-well cementing.

Raw material for the new plant will consist of oyster shells dredged from reefs in nearby Nueces Bay, and clay recovered from an extensive deposit located across the bay from the plant site. A 16-in. hydraulic dredge for recovering and washing raw shell is now under construction at Tell City, Ind., by the Marine

• Erle P. Halliburton Sr. is head of the new cement company which bears his name. The Halliburton Oil Well Cementing Co., of which he is president, is one of the largest users of cement in the country.

Division of Maxon Construction Co. It will measure 26 ft. in width by 104 ft. in length, and will have one 451ft. ladder and one general-utility ladder 65-ft. in length. The washing system for the dredge is being designed and engineered personally by Erle P. Halliburton, Sr.

The raw materials will be loaded into barges and towed to the plant, which is flanked by Nueces Bay on one side and by a ship channel on the other. From the bay side a short barge canal will be dredged under one end of a 100- by 700-ft. overhead crane runway. A 4½-cu.yd. high-speed crane will unload the clay and the shell into the storage area, which will have, as a contingency against interruptions in recovery operations, sufficient capacity to run the plant for about 45 days. There will be six storage silos located under the crane.

It is believed that the Corpus Christi plant will be the first operating on oyster shell to employ closed-circuit systems for both raw and finish grinding. Raw grinding will be done in three 8- by 16-ft. Allis-Chalmers mills, and two 7- by 40-ft. compeb mills will be used for finish grinding, the latter in closed circuit with 16-ft. Sturtevant air separators. The finish tube mills will each have a capacity of 120 bbls. per hour. Shell slurry will be thickened in a 175-ft. Dorr thickener which will have a capacity of 330,000 cu. ft.

The two Traylor rotary kilns will be fired with natural gas, and it is estimated that they will consume close to 5,000,000 cu. ft. of fuel per day. Each is supported on six concrete piers, and each will be equipped with a Fuller grate cooler for cooling the clinker. A single stack, measuring 19 ft. in diameter at the bottom, 12 ft. at the top, and 150 ft. in height, will serve not only the two kilns under construction now, but a third kiln to be installed later.

• The rotary kilns are 9½ ft. in diameter by 377 ft. long. Although only two will be installed at present, the design of the plant is based on the ultimate operation of three kilns.

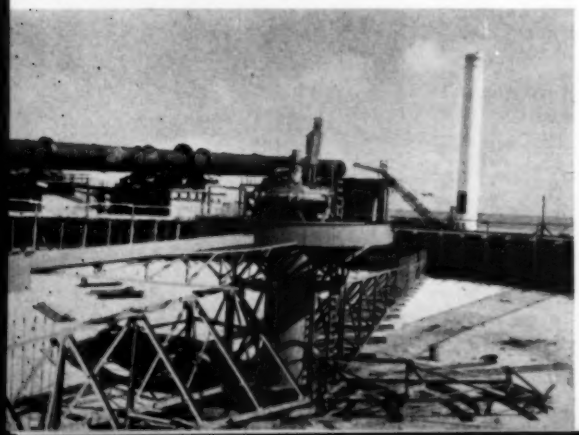
Ten 30- by 100-ft. concrete silos will be used for storing clinker. It is thought that storing clinker in this manner will result in better control of the various types of cement to be manufactured than would the more usual practice of open storage under a crane.

Finished cement will be stored in twelve 30- by 100-ft. silos. These will be arranged in two groups of six silos each, with a modern packhouse between. The silos and packhouse will flank a 300-ft. dock already under construction on the ship channel opposite the plant proper. In both the finish grind section of the mill and the packhouse Fuller-Huron Airslides will be used extensively for handling cement. It is

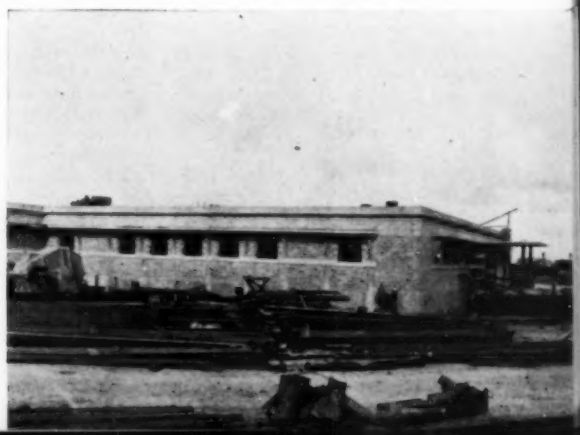
(*Continued on page* 128)

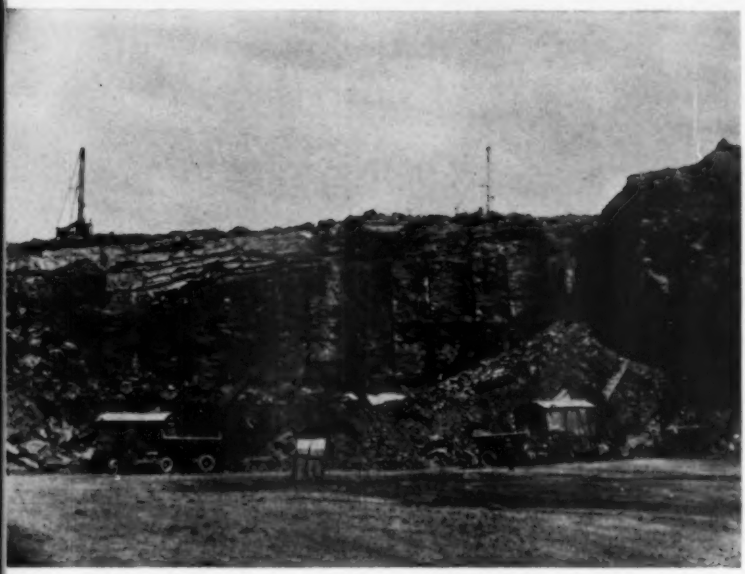
• Packhouse and cement storage silos are here seen under construction. There will be 12 silos in all, arranged in two groups of 6, with the packhouse between.

• Shell slurry will be thickened in this 175-ft. thickener, which has a capacity of 330,000 cu. ft.



• The attractive office building combines masonry unit and monolithic concrete in a design well suited to the Texas climate.





General view of Sandt's Eddy No. 4 quarry showing 2 well drills, 2 shovels and 2 truck trailers.

QUARRY IMPROVEMENT PROGRAM AT LEHIGH

By

W. E. TRAUFFER

THE Lehigh Portland Cement Company of Allentown, Pa. has since the war been continuously engaged in an extensive improvement program affecting all of its 14 cement plants in varying degrees. The programs at the various plants range from installation of a 350-ft. kiln, two tube mills and other equipment at Metaline Falls, Wash., to the addition of a single tube mill at the Fogelsville, Pa. plant. Included are new packhouses, change houses, electrical precipitators, diesel generating plants, conversions of electric motors from 40 to 60 cycles, etc. Affecting nearly every plant during this period was the conversion to truck haulage of all plants not already using quarry trucks. In many cases new equipment for removing overburden, new quarry shovels, etc., was also added.

This article is concerned entirely with the changes made in the company's quarries at Sandt's Eddy, Pa., and Oglesby, Ill., two radically different types of operations which together are thought to give a representative picture of the entire quarry improvement program. At Sandt's Eddy the removal of overburden is a minor problem and three separate quarries are operated. At Oglesby there is one large quarry and stripping is a real problem, requiring the removal of 40 to 50 ft. of overburden to get at a 30-ft. ledge of rock.

Sandt's Eddy Plant

The quarrying methods at the Sandt's Eddy plant are of particular interest because three separate quarries are being operated alter-

One of the 1¾-cu. yd. shovels in Quarry No. 4 loading the 10-ton trailer-trucks.

The 4-cu. yd. electric shovel loading one of the 10-cu. yd. quarry trucks at Oglesby.

nately. This is done mainly to obtain desired blends of rock but also at times for convenience. The original No. 1 quarry has long been abandoned and No. 2 is used only occasionally. Most of the quarrying is now done in Nos. 3 and 4, the latter having been opened just eight years ago.

The rock structure in the three active quarries is about the same but they differ in the chemical composition of the rock. Their faces range from 102 to 130 ft. in height and from 200 to 300 ft. in length. Well drill holes have 28-ft. burden and 15-ft. spacing and extend 6 ft. below the quarry floor. Single-row shots are made with Primacord and electric caps. At No. 4 the drilling is done with a new Bucyrus-Erie 27T electric well drill with a 6-in. bit, and 6-in. Loomis electric drill. At No. 3 a Keystone 6-in. Model 51 electric well drill is used, and at No. 2 quarry a 6-in. Loomis well drill. Secondary drilling is done with Ingersoll-Rand and Cleveland jackhammers and detachable bits are used which are resharpened by Rockbit Sales & Service, Philadelphia. Pennsylvania Pump Co. stationary compressors supply the air for the No. 3 and 4 quarries. An Ingersoll-Rand portable gasoline-powered compressor is used in places hard to get at and also in No. 2 quarry.

For many years in Nos. 3 and 4 Quarries trucks were used for hauling stone to a car-loading dock. Locomotives hauled the trains from these car-loading docks to the crushing plant. Before that locomotives and cars were used to haul the entire distance to the crushing plant. The round trip is from 1 to 1½ mi. for the different quarries. This equipment was replaced by a fleet of five Easton TR-10 Phoenix-type trailers, rated at 10-ton capacity (but actually hauling 13-14 tons), which are hauled by Mack EHX gasoline tractors. Usually all five units are used in one quarry at a time. The trucks are dumped at the crushing plant by an Easton dumping apparatus. In the No. 4 quarry loading is done with two Bucyrus-Erie 50B shovels with 1¾-cu. yd. dippers and using 440-v. electric current. In No. 3 there is one 440-v. Bucyrus-Erie 50B with 1¾-cu. yd. dipper and one 2200-v. 75B with 2½-cu. yd. dipper. In an 8-hour day the output of any of the quarries averages about 140 truckloads or 1800-1900 tons.

One of the 12-cu. yd. scrapers at Oglesby being loaded with help of pusher tractor.

The change to trailer-truck haulage along with other minor improvements have effected a marked decrease in cost and at the same time have increased the capacity of the quarry operation. A saving in labor is due to the fact that with the old methods two quarries had to be operated at one time for adequate capacity and the mixing or blending of the stone was done direct from the quarries. Operation of one quarry at a time also helps prevent costly shutdowns as it gives ample time for the servicing and repair of shovels and other equipment in the idle quarries.

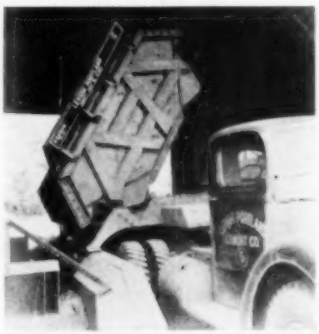
The five Easton truck-trailers replaced four gasoline locomotives (three 15-ton and a 10-ton), 32 Phoenix-type 10-ton cars and four 10-ton end-dump trucks.

The overburden at these quarries consists largely of clay and shale and varies from 3 to 18 ft. in thickness. This is now removed by a Caterpillar D7 tractor with an 8-cu. yd. LeTourneau Carryall scraper. Whenever necessary the scraper operator uses a ¾-cu. yd. Marion crane to remove dirt from pockets for the scraper to remove later. The overburden is hauled to a dump about 700 ft. away. In an 8-hour day this equipment can remove from 400 to 500 cu. yd. and can just stay ahead of quarrying operations. Before this equipment was purchased the overburden had been removed by contract, and before that, 15 or 20 years ago, by company-owned shovel and horse-drawn wagons.

Oglesby Plant

At Lehigh's Oglesby, Illinois quarry the emphasis is on the stripping as the volume of overburden removed far exceeds the stone quarried. Actually from 40 to 50 ft. of overburden is now being removed to uncover from 28 to 32 ft. of limestone. Some of the stone has as little as 15 ft. of cover but much of it has up to 70 ft. From 350,000 to 400,000 cu. yds. of overburden must now be removed to uncover enough stone for one year's operation of the cement plant.

A diesel-powered quarry truck discharging to primary crusher at Oglesby.



One of the trailers at the primary crusher at Sandt's Eddy.

The overburden consists of clay, sand and gravel, hard clay or shale. About 22 years ago contractors, using shovels, locomotives and cars removed so much overburden where it ranged from 3 to 20 ft. in depth that no more stripping needed to be done again until nearly four years ago. At that time a 6-yd. LeTourneau Carryall scraper was purchased and this performed so well that two Model C Tournapulls with 12-cu. yd. Model LP Carryalls were added in August, 1946. In the following year four similar units were added.

Each of the six LeTourneau units hauls from 20 to 80 loads daily, depending on the length of the haul and the nature of the material being excavated—there is considerable variation in the loading and unloading characteristics of the various types of material in the overburden. Two tractors, a Caterpillar D8 and an Allis-Chalmers HD-14C, are used for pushing or pulling the Tournapulls when the loading is difficult, and these are also used for leveling off the fill, which is in a worked-out section of the quarry. Some of the very hardest clay is removed by a 3-cu. yd. P&H diesel shovel. A Bucyrus-Erie 20B electric shovel with a ¾-cu. yd. dipper loads clay for cement plant.

The original plant at this location was built in 1900 by the Chicago-Portland Cement Co. At that time the quarry was near the plant and on the same side of the Vermilion River. In 1908 this quarry was abandoned and the present one across the river from the plant was opened. A cableway was installed to convey the rock to the plant. In 1916 Lehigh took over this operation.

The quarry face is now 4,000 ft. long and from 28 to 32 ft. high. The stone, a good grade of relatively soft and moderately high-calcium limestone, is badly laminated and broken at the west end of the quarry but is comparatively solid elsewhere. It is the same formation being worked by two other cement plants in the vicinity. Underneath this layer of rock is 3 to 4 ft. of shale below which is more rock. The shale bed forms the quarry floor.

Drilling is done with three 6-in. well drills and staggered holes are spaced 12 ft. in both directions. Shots usually consist of two or three rows of five or six holes each. The delay system of blasting is used. Where the stone is broken up 40 percent explosive is used and 50 and 60 percent for the solid rock. An Ingersoll-Rand portable compressor and jackhammers are used for secondary drilling.

A Bucyrus-Erie 100B electric shovel with a 4-cu. yd. dipper does all the loading in the quarry. A Caterpillar D7 tractor with a bulldozer is used for cleanup. Up to three years ago three 20-ton diesel-electric locomotives and about forty 7-ton cars were used. These were replaced by five Mack Model LMSWM trucks with 10-cu. yd. Gar Wood one-way side-dump bodies and hydraulic hoists. These heavy-duty trucks have dual rear axles with dual wheels and are powered by 200-hp. Cummins NHB diesel engines. With an average 1¾-mi. round trip four of these trucks haul 2,000 tons of stone in 8 hr., which is more than enough for 24-hr. operation of the plant. In addition to greater capactiy these trucks have made possible greater flexibility as quick shifts can be made to stone of different analysis when needed, etc. Some of these trucks are also used part time for hauling clay and for hauling away overburden when the stripping shovel is in operation.

The original crusher building had

(*Continued on page* 117)

For Those Hard-To-Get-At Corners

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Powerful and easily maneuverable OSGOOD hoes dig deep and fast, dump clean. The all-steel reinforced boom provides long reach and high dumping. The operator has clear vision and precision control of all movements for quick and accurate spotting of the dipper. The power dipper trip saves time and energy. The OSGOOD is versatile, too; is easily converted from Hoe to Shovel, Crane, Dragline, Clamshell or Piledriver. Write for descriptive literature and specifications.

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FUEL ECONOMY

Reducing Fuel Costs in Pulverized Coal-Fired Cement Kilns by the Use of Anthracite Fines

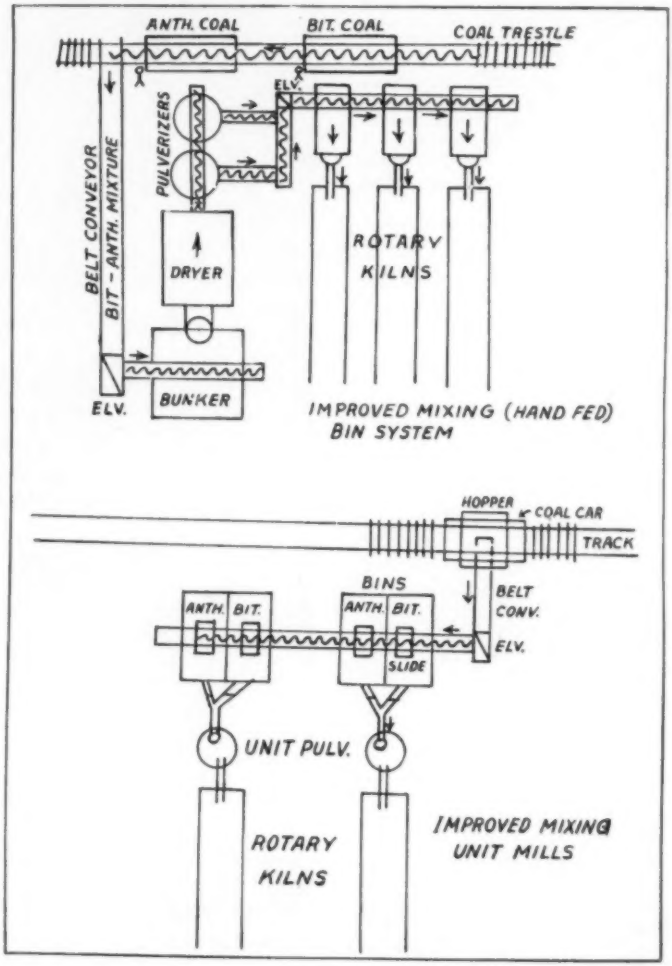
By PATRICK D. HARRINGTON
Combustion Engineer, Alpha Portland Cement Co., Easton, Pa.

ONE of the biggest problems facing cement management at the present time is how to check or reduce their steadily increasing fuel costs. Not only are they faced with the high cost of bituminous coal but also with a shortage of coal suitable to their needs. Even with the higher price of the coal they still find they are buying a poorer grade of soft coal containing considerably more ash and moisture than they are accustomed to burning. This poor grade of coal when burned in a kiln results in lower production and poor waste heat performance which is very important from a power standpoint to many cement operators. It has now become common practice for the cement industry to pay a bonus in order to get better coal that is, coal containing a lower percentage of ash and moisture, and this has served to establish a special grade of coal commonly referred to as "premium" coal. All of this has tended to increase their ever-rising fuel costs still higher.

Recently it has come to the attention of a number of cement plant operators located in the Lehigh Valley that they have been overlooking an abundant supply of anthracite fines suitable to their use. These operators and many others are very favorably situated with respect to the Pennsylvania anthracite region. In fact, a considerable saving by the use of anthracite can be realized by many cement plants that are located as far as 200 miles from the anthracite district.

The use of anthracite is not a new subject to cement men. Many companies have tried unsuccessfully to burn this type of coal, while other companies have been successful and have realized a substantial saving. This includes one eastern Pennsylvania operator who has been burning a mixture of up to 40 percent of river-dredged anthracite in his kilns for the last several years. Anthracite has been used in the British Isles, Sweden and other foreign countries as a fuel for cement kilns.

The writer, upon investigating the failures in the use of anthracite coal in the cement industry, discovered the following three main reasons: high moisture content, low volatile matter, and a low Hardgrove grindability index. The high moisture content of the anthracite was too much for their handling equipment and could not be lowered sufficiently with their dryers to give good combustion. Then, too, with a low grindability index, there was excessive wear on the grinding equipment, increased power consumption and reduced capacity. Also, with the low volatile anthracites (coal containing only 3-6 percent volatile matter) ignition was delayed to such a point as to give a very poor



flame with a resulting poor clinker.

In view of these problems it became apparent that to successfully burn anthracite it would be necessary to use a soft, low-moisture, medium-volatile coal containing not over 12 percent ash. Such a coal is now being used by many cement companies and it is this special grade of semi-anthracite coal that I wish to discuss. This coal was formerly deep mined from the Treverton area located near Shamokin, Pennsylvania and is sold by the Philadelphia and Reading Coal and Iron Company. Because of the high friability of the coal in this area, there is a large supply of the buckwheat, rice and barley sizes stockpiled and the present operation now consists of reclaiming; that is, washing and sizing of these stock piles at their Treverton (Franklin Colliery) and Zerbe plants (Henry Clay Colliery). At the present time little use has been found for the finer screenings; namely, number 4 (minus 3/32-in. and plus 3/64-in.) and number 5 (minus 3/64-in. buckwheat).

The above coal has a Hardgrove grindability index of 62-64, and an "as received" analysis of 8 to 10 percent moisture, 8 to 10 percent volatile matter, 8 to 12 percent ash and 66-74 percent fixed carbon. It contains approximately 13,550 B.t.u.'s per pound on a dry basis and averages about .8 to 1 percent sulphur. All of the above analysis is very favorable for this coal to be used in a pulverized-coal-fired cement kiln.

The proportion of anthracite coal that can be used is determined by the type of system installed and various other factors. In general, the unit system seems to be the better of the two for handling anthracite. However, it is usually limited by its drying capacity. To illustrate the possible reduction in fuel costs that might accrue from the use of anthracite with bituminous coal, Table I has been compiled for different mixtures.

From the table it can be seen that a saving of 3.13 cents/bbl. of clinker can be realized by using only a 25 percent mixture of anthracite with bituminous coal. In a plant producing two million barrels of clinker per year the saving involved would amount to $62,600 annually. By using a 50 percent anthracite and 50 percent bituminous mixture a far greater saving could be had.

No correction has been made for the higher moisture content of the anthracite coal as with its ash content it will equal the average B.t.u./lb. of the bituminous coal now being used by most cement plants. There should be no increase in the grinding costs owing to the friable nature of this coal.

For winter shipments the coal is put through a process known as "winterizing" which consists of spraying the sides of the coal cars with oil and the coal itself with calcium chloride or sodium chloride to the amount of about 1½ pounds per ton. An additional cost of 10c per ton is charged for this treatment.

From a theoretical standpoint 100 percent anthracite can be burned and has been, but so far it has not proved entirely satisfactory. High autoclaves and high free lime clinker will result if care is not taken to see that good combustion is taking place in the kiln. When starting to burn anthracite it is suggested that a 20 percent anthracite, 80 percent bituminous mixture be first fired and eventually the percent anthracite increased until a limiting condition is reached.

It is suggested that someone with some experience in kiln burning be assigned to experiment with the anthracite until a satisfactory result is obtained. He should first ascertain all the kiln conditions, as the kiln is normally fired with bituminous coal, and then try and maintain these conditions when burning a mixture of bitumious and anthracite coals. He should be especially interested in the following conditions: (1) Percent moisture in the "as fired" coal mixture should be 3 percent or under and will definitely give inferior results above 4 percent "as fired" moisture. (2) Maintain a uniform mixture of anthracite and bituminous coal being fired into the kiln. An uneven mixture will give a sputtering and surging flame and cool down the burning zone of the kiln. (3) Maintain a high coal-air temperature of approximately 250 to 280 deg. F. and burn as close to the nozzle tip, 6 to 18 in., as practicable. This should give rapid combustion and will give any unburned anthracite particles a little more chance to ignite in the burning zone. (4) At least 80 percent fineness through 200-mesh screen and 90 percent fineness through 100-mesh screen is recommended.

A little investigating and work on the part of a cement plant operator might well mean a fuel saving of over $100,000 annually for his plant. Such a sum is well worth while considering and in view of the present bituminous coal situation, might relieve the demand for premium coal to such an extent that a better grade of good kiln coal will eventually become available.

TABLE I—ESTIMATED SAVINGS

	Anthracite	Bituminous
Cost per net ton f.o.b. mine	$3.50	$4.40
Freight rate	2.15	3.75
Total delivered price	$5.65	$8.15
Different Mixtures		
	25% Anthracite 75% Bituminous 100 lbs./bbl.	50% Anthracite 50% Bituminous	100% Bituminous
	100 x 30.10	100 x 12.80	100 x 8.15
	4 x 2000	2 x 2000	2000
	37.62 cents/bbls.	34.50 cents/bbls.	40.75 cents/bbls.
Savings:	3.13 cents/bbl.	6.25 cents/bbl.	

Bankers Told of Cement Industry Outlook

A favorable outlook for the cement industry was described yesterday by John J. Porter, chairman of the board, North American Cement Company.

Mr. Porter spoke at a luncheon of the Junior Investment Bankers Association of Baltimore, held at the Southern Hotel.

One reason for an optimistic viewpoint, he said, is that even if a depression comes the Government's public works expenditures for unemployment relief would mean more consumption of cement.

Discussing the abandonment of the old basing point system, Mr. Porter said this did not make much difference in the present sellers' market in cement. But he added that it will be difficult to determine what will be the effect of this change in pricing method when the industry returns to a competitive condition.

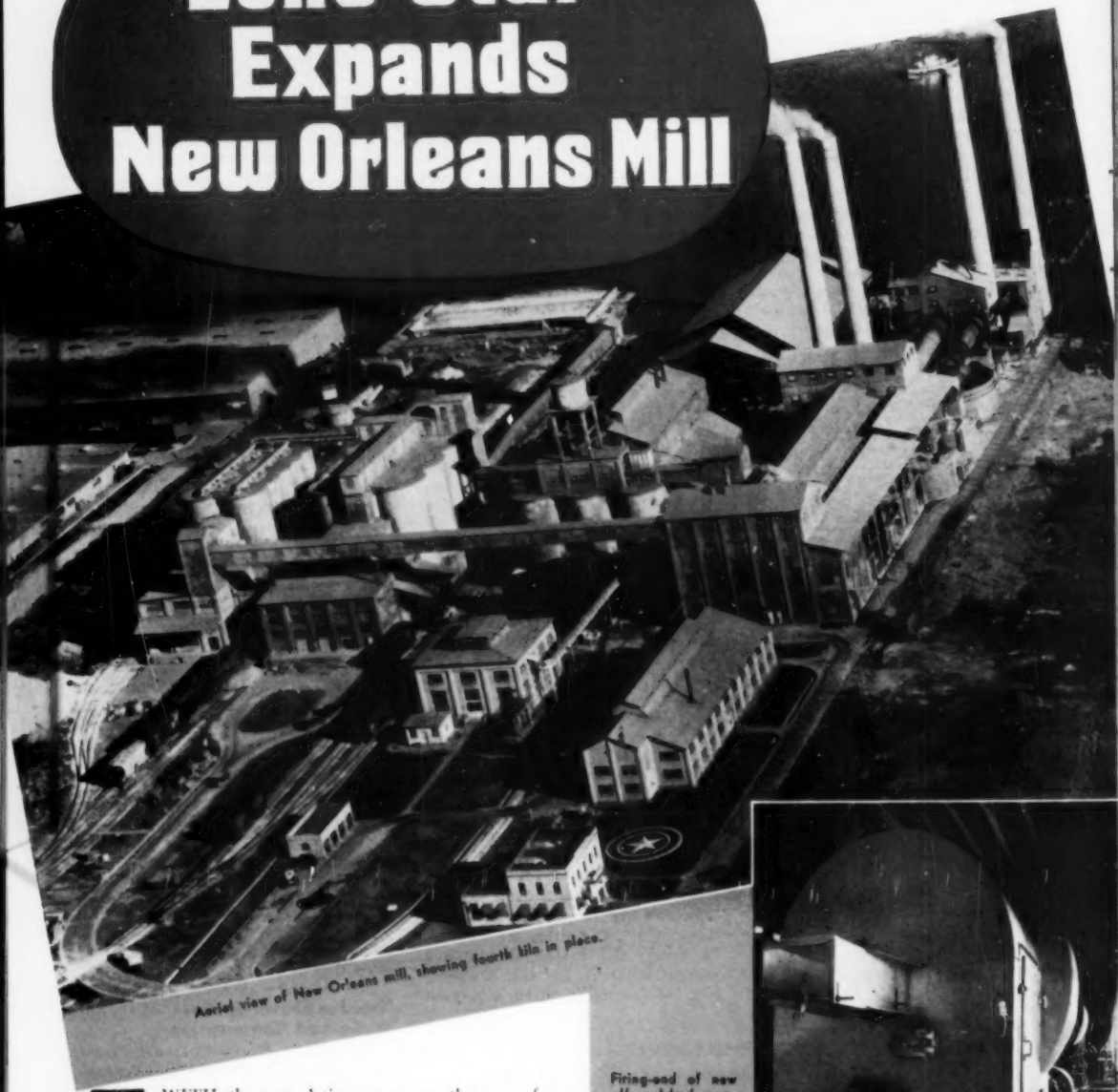
F. Barton Harvey, Jr., president of the association, presided at the meeting. Guests included officials of the Lone Star Cement Company, Standard Lime and Stone Company, and Universal Atlas Cement Company.

Sweden Shows Decline In Cement Consumption

The Skanska Cement Company, Malmo, Sweden's leading cement concern, shows a net income of 1.99 million kronor ($5.5 millions), compared with 2.09 millions for 1947. The dividend remains unchanged at 7 percent. Cement consumption in Sweden declined by 13 percent compared with 1947, but it was still 18 percent higher than in 1939. For the first time since 1939 cement was again exported. All the shipments were made toward the end of the year, and the total was about 56,000 tons.

Lone Star Expands New Orleans Mill

By
WILLIAM M. AVERY

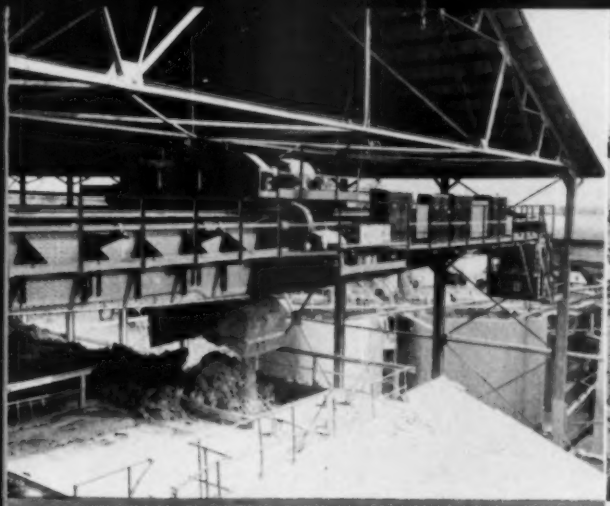


Aerial view of New Orleans mill, showing fourth kiln in place.

Firing-end of new all-welded gas-fired kiln. This kiln is 10 ft. by 11 ft., 3 in. in diameter by 374 ft., 4 in. in length.

another ON THE SPOT report

WITH the completion some months ago of a fourth kiln at its New Orleans mill, the Lone Star Cement Corp., has dealt a serious blow to the recurring cement shortages in the southern section of the United States. The new kiln, which went into operation late in 1948, has increased mill capacity approximately 50 percent, to some 6,400 bbls. in 24 hours. Planned and carried out during a period of very high construction costs, the project represents a resounding affirmation of Lone Star's belief in



Mixed limestone and shale are recovered in the storage shed with this overhead crane and fed to a hammermill.

Upper right: The company's diesel-powered river boat, Incor, framed here by the mast and boom of the stiff-leg derrick which unloads the barges, comes down only as far as Mobile, where tugs take over.

Left to right: R. D. Glenn, asst. superintendent; J. G. Gunn, chief chemist; L. R. Schumbrecht, draftsman; J. E. Morages III, plant engineer; and H. Festing, purchasing agent.

the industrial future of the South.

The new construction work includes a complete kiln installation, dust collectors for all four kilns, new raw and finish grinding units, cement cooling equipment, slurry tanks, an additional packhouse, switchgear and transformers. The office and laboratory have been completely air-conditioned.

Raw Material The quarry is located on the Tombigbee River at St. Stephens, Alabama, about 100 miles north of Mobile. High quality Marianna limestone overlays a stratum of shale, and the two materials are so recovered and processed that barges of alternately high and low shale content may be shipped to the mill. Both the limestone and shale are very sticky and awkward to handle through most of the year. Apron feeders convey the material to a 5040 Dixie hammermill with a movable breaker plate that is necessary to prevent build up and also a special moving backplate and choking.

The barge trip from the St. Stephens quarry to the cement plant at New Orleans covers a distance of 251 miles. The company's twin screw diesel-powered river boat, the *Incor*, runs from St. Stephens on the Tombigbee River to Mobile where two ocean going tugs, the *Lone Star* and the *Charles L. Hogan*, alternately make the remainder of the trip to New Orleans, primarily through the intercoastal waterway. The plant itself is on the industrial canal in New Orleans which connects with the Gulf of Mexico through Lake Ponchartrain.

Efficient and reliable operation of the marine equipment is vital to the New Orleans plant, and visitors are always impressed with the spotless and efficient appearance of the tugs and the ship-shape condition of the barges. Visitors are also impressed with the excellent meals served on the tugs.

The diesel engines are overhauled at regular intervals, and all equipment is carefully maintained with the result that marine service is extremely reliable.

Raw Storage At the mill the mixture of limestone and shale is unloaded and placed in storage with an American Hoist & Derrick stiff leg crane using a 3-cu.-yd. clam shell bucket. Two overhead traveling cranes, one a Milwaukee and the other a new Bedford, both with 3-cu.-yd. buckets, handle the material in the 100- by 220-ft. storage shed, storing the high-lime and low-lime mixtures separately.

Through much of the year the raw material is so wet that it has a thick, doughy consistency in storage, and does not resemble average limestone and shale materials as they are conventionally recognized.

Completion of Fourth Kiln Jumps Capacity to 6,400 Barrels Per Day

Raw Grinding A very unusual system of raw grinding is used in that it involves four stages. Slurry is made starting with a wet secondary hammermill.

The raw material is fed from storage to an apron feeder which precedes a Dixie hammermill. Sufficient water is added to the hammermill to bring the consistency to approximately 47 percent H_2O. The feed rate of the entire raw grinding system is determined by the apron feeder in the storage building.

The following progressive steps are used:

a) 60-in. wide apron feeder.

b) One 3650 Dixie hammermill with 200 hp. motor.

c) Two F. L. Smidth No. 8 wet Kominuters, each driven with a 125 hp. motor and each carrying a 12,000-lb. ball charge.

d) Two mechanical vibrating screens to give a separation at approximately 20 mesh.

e) One new F. L. Smidth 8½ by 30-ft. two-compartment Unidan mill driven by a 1000 hp. electric machinery motor. This mill is charged with 175,000 lbs. of 1-in. to 1½-in. diameter balls.

f) Three 6-in Wilfley Model C slurry pumps with 40 hp. motors. These pumps transfer the slurry to blending tanks where the mix is corrected. They also pump reground slurry to the feed tanks.

g) The corrected mix is pumped back to a 7- by 30-ft. F. L. Smidth No. 20 tubemill charged with 90,000 lbs. of 1-in. balls and driven by a 600 hp. motor.

h) The reground material is pumped to the kiln feed tanks.

Two new slurry tanks have been added to make a total of ten. Morris pumps are used for slurry transfer and kiln feed purposes.

The capacity of the raw grinding system is approximately 300 bbls. per hour. The product of the Unidan mill runs approximately 86 percent minus 200 mesh, and the regrind mill product averages about 92 percent minus 200 mesh. The slurry is very thick, even with a 47 percent moisture content.

Clinker Burning Including the new unit there are four kilns in all:

Kilns No. 1 and 2: 8- by 9- by 219-ft Reeves, 4-support with 60 hp. motors. Capacity approximately 1,100 bbls. each.

Kiln No. 3: 11-ft 3-in. by 10- by 375 ft. combination Vulcan and F. L. Smidth 6-support rotary kiln with 100 hp. G.E. type BTA motor. Capacity approximately 2,000 bbls.

Kiln No. 4: 11-ft. 3-in. by 10- by 375 ft. F. L. Smidth 6-support kiln with 125 hp. G.E. type ACA motor. Capacity approximately 2,200 bbls.

The coolers are as follows:

Rotary Coolers No. 1 and 2: 8- by 80-ft. Reeves with 25 hp. motor.

Rotary Cooler No. 3: 9- by 80-ft. Reeves with 25 hp. motor.

Rotary Coller No. 4: 9-ft. 6-in. by 80-ft. Vulcan with 30 hp. motor.

The combined capacity of the kilns is approximately 6,400 barrels daily.

The new No. 4 kiln is equipped with an air-cooled discharge end of Lone Star design. About 20 of these are in successful service. Through the use of this design, nose rings are no longer a maintenance problem.

All rotary coolers are brick lined at the feed end for 25 ft., incorporate special cast-iron intermediate lifters in the center section for 12 ft., and have 36 ft. of steel plate lifters in the discharge section plus a 7-ft. blank section. These proportions have been found very satisfactory in many Lone Star cooler installations.

All large chunks of clinker are broken up in the cast iron lifter section, while the clinker is still soft and hot, and the discharged clinker is so small a crusher is not justified.

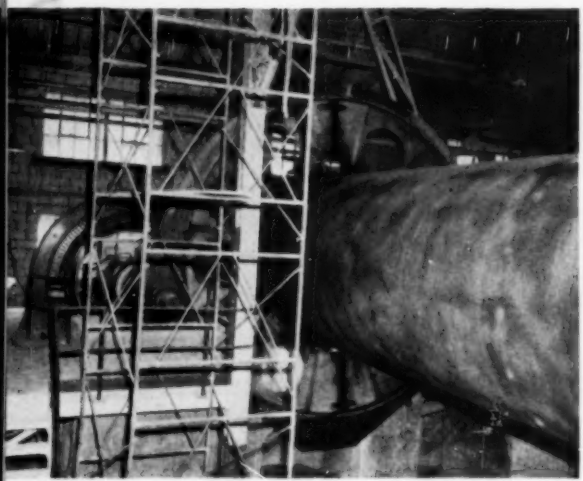
The average temperature of the clinker discharge from the new No. 4 rotary cooler, which is equipped with good air seals, is 129 degrees F. over an ambient temperature of 77 degrees F.

Kiln Gas Burners Natural gas is used for fuel, and each kiln uses a very simple burner consisting of a pipe approximately 2 in. in diameter, the end of which is fitted with a tip bored between 1⅜ in. and 1¾ in. in diameter, depending upon the kiln.

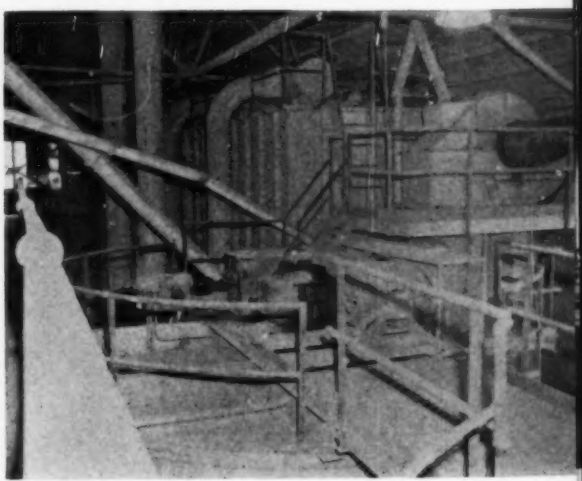
The natural gas supply is furnished at a pressure maintained at approximately 30 lbs. in the header to the kilns and is regulated by individual valves to a pressure of 8 to 10 lbs. at the tips. Higher tip pressures create a high intensity audible vibration.

No primary air is used, and all air required for combustion consists of hot preheated air drawn up from the rotary coolers.

After passing over screens the slurry is fed to this new 8½- by 30-ft. 2-compartment mill, which is charged with 175,000 lbs. of steel balls.



In the foreground may be seen the top of the 16-ft. air separator with which the new 7- by 30-ft. dry grinding mill operates in closed circuit.



Sly Dust Filter in a Connecticut rock crushing plant for the suppression and positive collection of dust created by crushing, screening and conveying operations. The same filter is shown in the entire view of plant below.

IN THE CRUSHED STONE FIELD, TOO SLY DUST COLLECTORS DOMINATE

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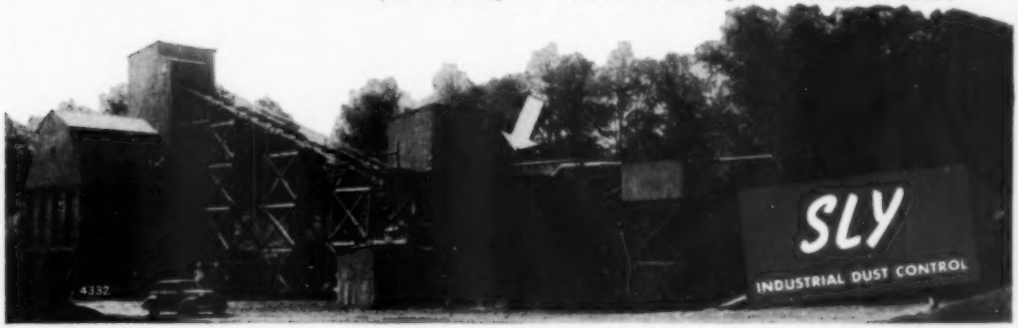
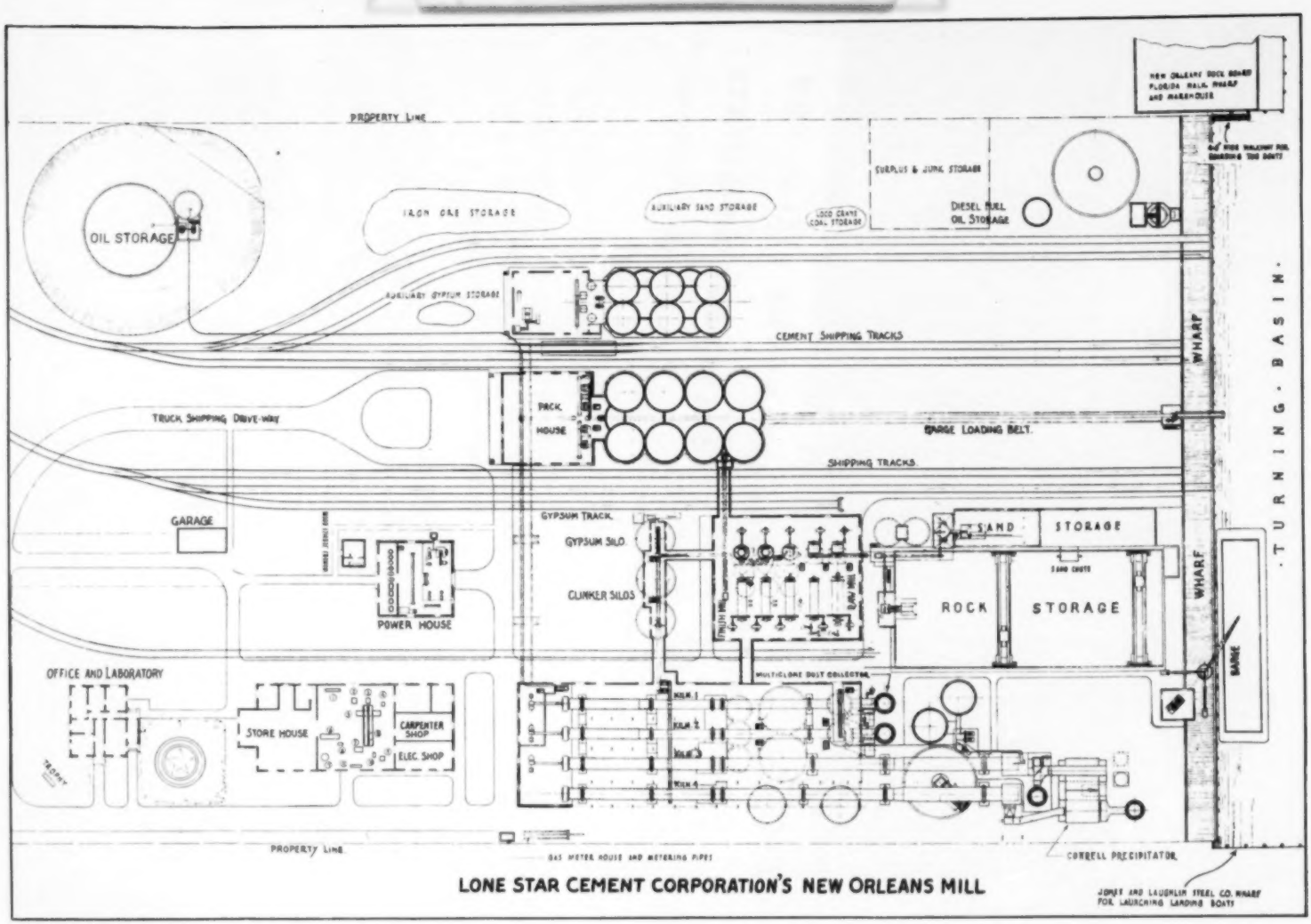




LONE STAR CEMENT CORPORATION'S NEW ORLEANS MILL

The burning system is extremely simple and satisfactory and the fuel consumption with this type of burner is less than that with any of the more complicated burners previously used which required primary air.

Kiln Controls The kiln controls are very simple and foolproof and no automatic features whatsoever are used. The instruments consist of the following:

Gas pressure and flow recorder.
Kiln temperature recorder.
Kiln speed recorder.
Draft gauges.
Kiln and draft fan ammeters.
Kiln revolution totalizer.
Slurry feeder indicator lights.
Push button stations.

Chain System The New Orleans raw material acts entirely different from that encountered at Lone Star's 14 other plants. Mud rings were an extremely serious problem when the kilns were first placed in operation, and it was only through much study and care that the problem was overcome in a practical way.

The kilns as now operated run for months at a time without a shutdown due to mud rings. One of the contributing factors that has made this possible is the design of the chain systems.

In the case of the new No. 4 kiln, a dense Smidth chain system is installed for 28 ft. at the 11-ft. 3-in. diameter feed end section.

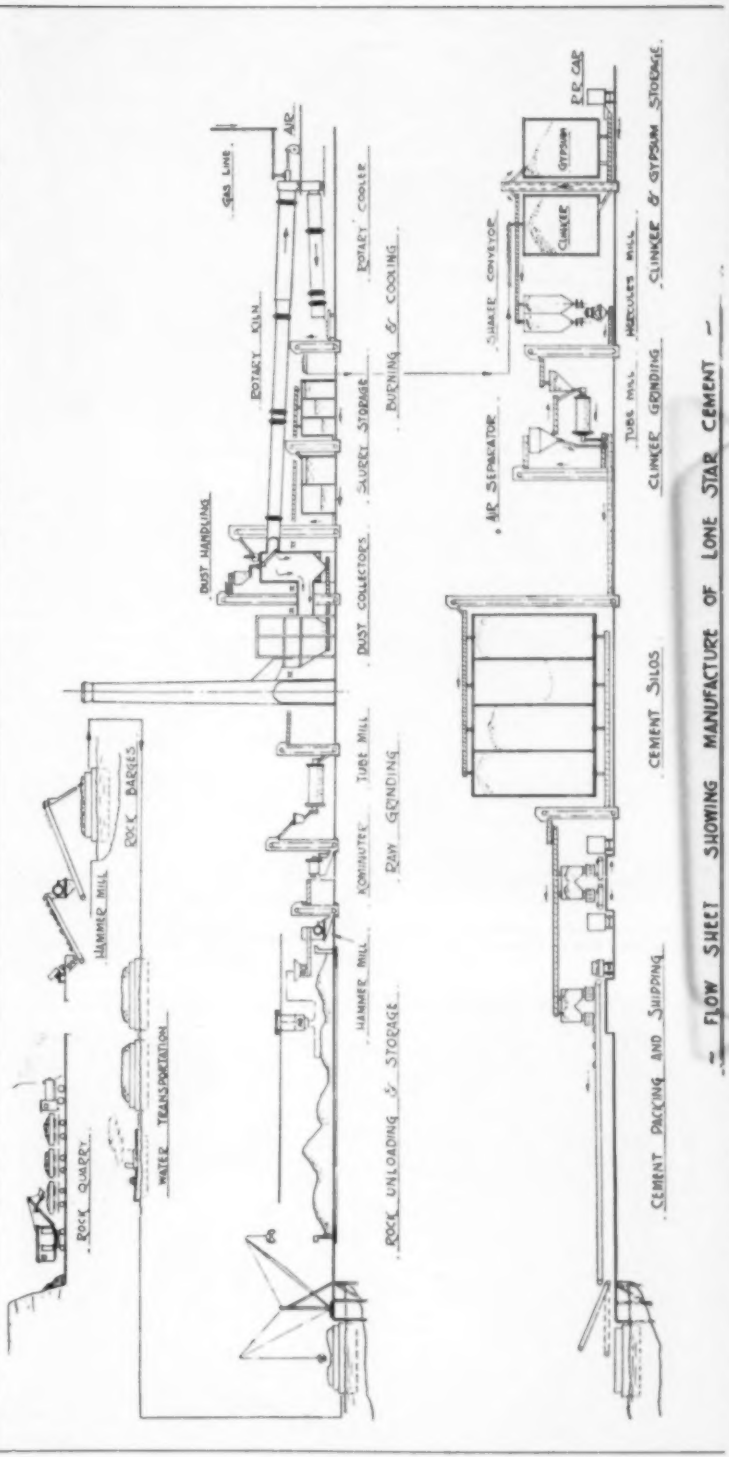
In the following 60 ft., four 1⅛-in. round link scraper chains each 58 ft. long are installed running lengthwise and at a slight angle to the axis of the kiln. The action of these heavy chains serves to cut down the mud rings which form in this intermediate zone.

The third set of chains which follows the round link scraper chains consists of a moderately dense system extending for 32 ft. down the kiln.

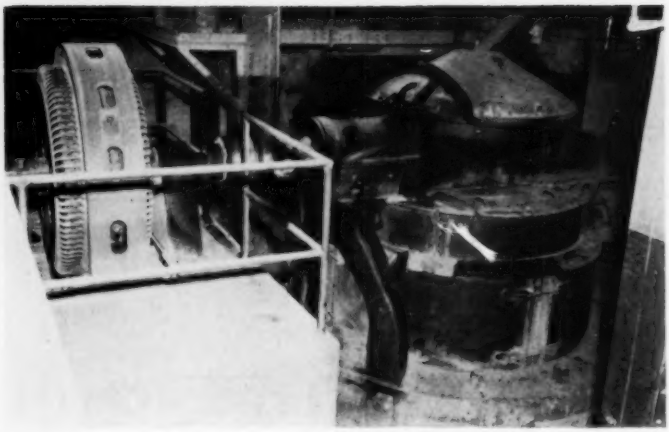
In all, the overall length of the chain system is 121 ft. As no chains are used in the first 15 ft. at the feed end, the discharge end of the chains are 136 ft. from the feed end of the kiln.

The use of the above chain system alone does not solve many of the kiln operating problems, and it is only by means of careful and clever procedure that the kilns are able to run continuously.

Dust Collectors In conjunction with the expansion program, Cottrell rod curtain type electrostatic precipita-



FLOW SHEET SHOWING MANUFACTURE OF LONE STAR CEMENT



View of the new preliminary finish grinding mill.

Wallace Baudry, general mill foreman at the New Orleans plant.

tors were installed for each of the large kilns. All dust is successfully returned to the kilns and no dust whatsoever is hauled away. The combination of natural gas for fuel, the composition of the raw materials, the special system of mixing the dust with the slurry, and careful burning all contribute to the successful use of the dust.

The total alkali in the clinker runs less than 0.35 per cent, and the total SO_3 runs between 0.2 and 0.3 percent.

Each kiln is equipped with an induced draft fan driven by a 100-hp. motor and individual concrete stacks are used for each kiln.

Dust Feeders The dust mixing and feeding system which is responsible for the 100-percent utilization of dust consists of the following:

A paddle pug-type mixer driven by a 3 hp. motor is placed over the kiln feed pipes. Dust is fed (at a rate proportionate to the kiln speed) to the feed end of the pug mill, where sufficient water is added to produce slurry similar to the regular slurry.

Approximately 30 in. from the point where the dust and water are added a stream of regular slurry is fed in and the remainder of the pug mixer stirs the combination of slurries into a smooth uniform slip which combines with the regular slurry in the feed pipe. The slurries, having been thoroughly pre-mixed, pass into the feed end of the chain system without any difficulty. No increase in mud ring trouble has been encountered due to the addition of dust.

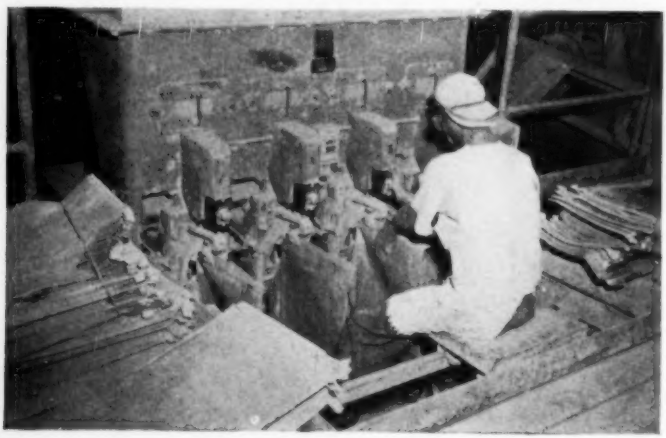
This process of returning Cottrell dust is similar to that covered by patent No. 2,140,471 issued to Andrew K. Frolich and Andrew Lundteigen, Jr. and assigned to the Ashgrove Lime and Cement Co.

Clinker Grinding The rotary coolers discharge into a Smidth skipulter running transversely to the kilns. Clinker is elevated and stored in two 32-ft. diameter by 50-ft. high clinker storage silos holding 6,000 barrels of clinker. A third silo of the same size holds 1,000 tons of gypsum. Reclaimed clinker and gypsum is fed to bins over each of three Bradley Hercules mills.

The new Type H Bradley mill recently installed is fed by a Merrick Feedoweight while the older mills use table feeders. Three Bradley-Hercules mills are used for preliminary grinding, each driven by a 300-hp. synchronous motor. These mills each grind approximately 165 barrels of clinker per hour.

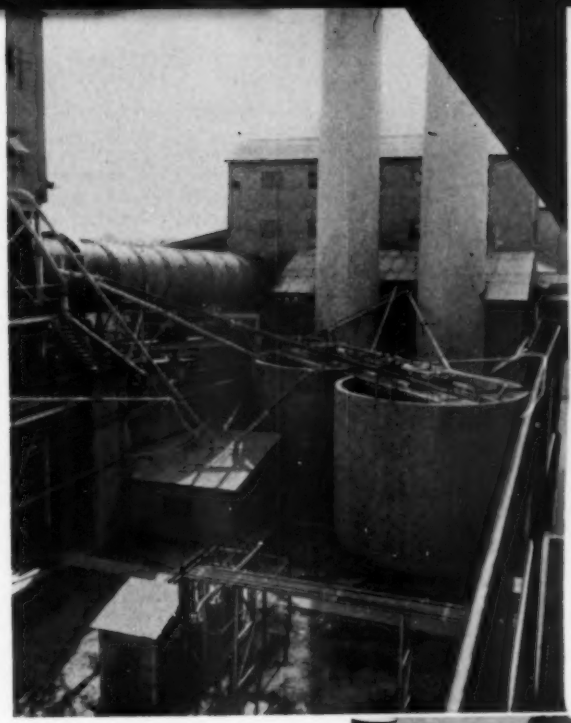
The Bradley Hercules product is fed by means of elevators, bins and feeders to three Smidth 7- by 30-ft. No. 20 dry grinding tubemills, each in closed circuit with a 16-ft. Sturtevant air separator. Each mill is driven by a 600-hp. motor and the combined output is approximately 330 barrels of Type I cement per hour.

One of the 4-spout packers in the new packhouse. This installation was made in 1945.

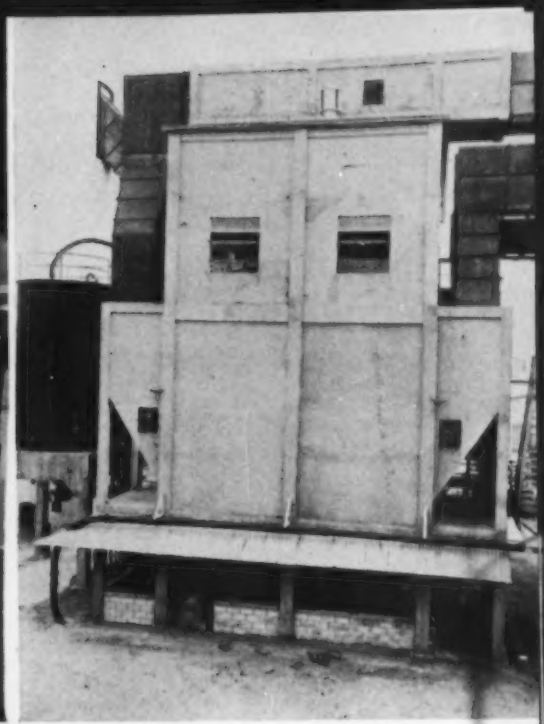


Incher for Mills The new 1,000-hp. raw mill motor and 300-hp. Bradley - Hercules mill motor were both supplied by the Electric Machinery Mfg. Co. They are of the full voltage across-the-line start type. Each motor when started from rest comes up to full speed in 4½ seconds.

Each of these motors is equipped with an inching device by means of



From the raw mills the slurry is pumped to concrete blending tanks. Normally 3 of the 8 tanks are used for storage and the remainder as correcting basins.

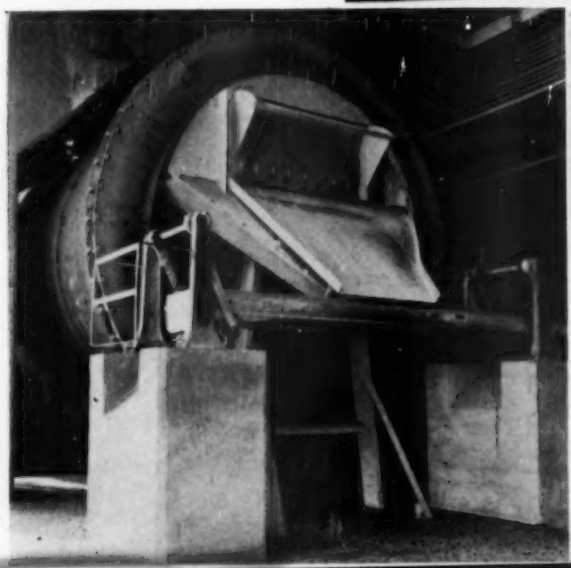


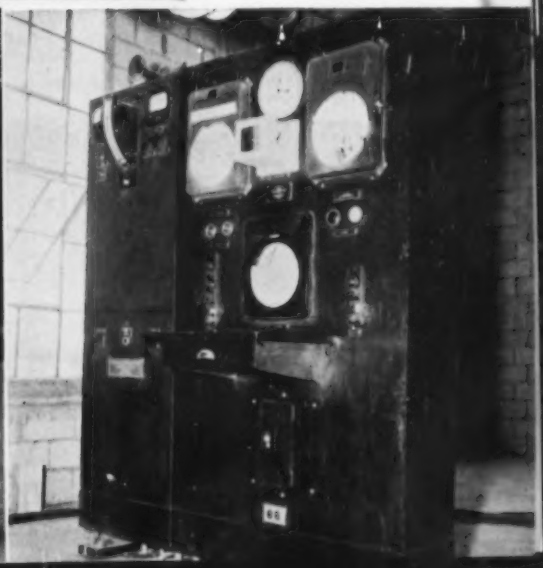
Each of the long kilns has just been equipped with rod-curtain type electrostatic precipitators which are housed in the structure shown above.

Clinker and gypsum are fed to the new preliminary finish grinding mill by these constant-weight feeders.

Discharge end of the rotary cooler for the new kiln. All four coolers discharge into a skipulter conveyor which runs transverse to the kilns.

Centralized control panel for the new kiln.





Lone Star's New Orleans mill has one of the best safety records in the country. The P.C.A. safety trophy proudly displayed in front of the plant office building has been reawarded 11 times.

which they may be run at a very low speed for spotting the manholes in the case of the Unidan mill, or for positioning the rolls for lubricating or inspection purposes in the case of the Bradeley-Hercules mill. This feature has been extremely helpful to the operators.

Air Cooling of Cement The third tubemill air separator unit is equipped with a special Northern Blower Company No. 468A dust collector, one section of which has a capacity of approximately 6,000 c.f.m. and is used in the conventional manner for venting the mill and for placing all parts of the grinding system under suction. The second section of the Norblo collector is equipped with an independent fan and motor and has a capacity of 10,000 c.f.m. Cold air is fed into the inner compartment of the 16-ft. separator and drawn off from the space between the inner and outer cone. It is passed through the Norblo collector at the rate of 10,000 c.f.m. previously mentioned.

Very effective cement cooling has resulted, as indicated by one of the tests tabulated below:

The following information is interesting:

1. With no cooling the feed and tails are at the same temperature but the fines are 10 to 15 degrees cooler because they come in contact with the outer jacket of the air separator.

2. With the Norblo cooling system in service, the tails run 28 degrees cooler than the feed and the fines 22 degrees cooler than the feed.

3. With the Norblo system in service the tails run 6 degrees cooler than the fines because the cooling air is supplied to the inner jacket.

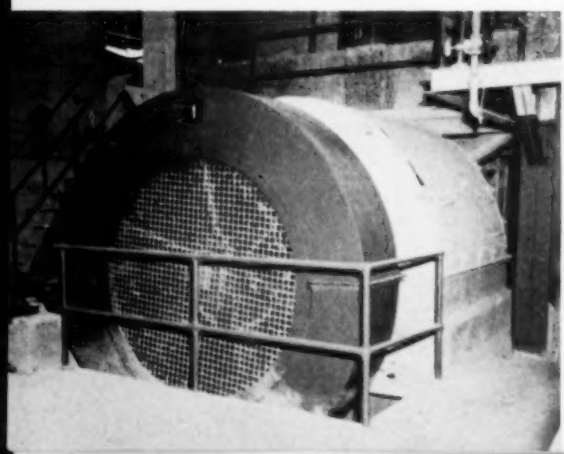
When this particular test was made the temperature of the cement was still rising when the readings were taken, and because the high temperature was causing grinding trouble the test was stopped.

In the case of the old No. 1 and 2 finish tubemills at New Orleans, cooling is done with water on the mill shells which results in only a 25-degree drop in temperature. The scale that accumulates must be frequently cleaned from the shells.

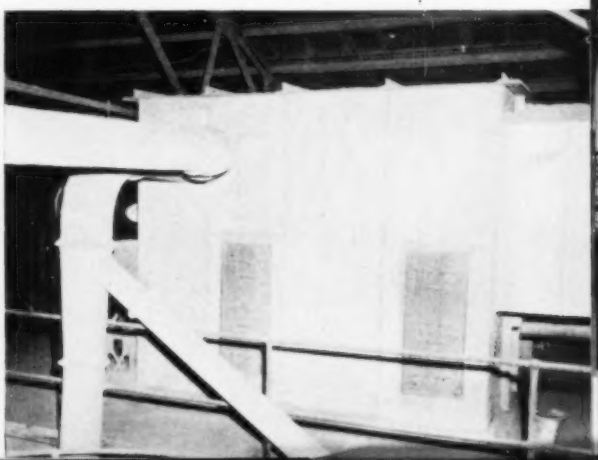
No. 3 Finish Tubemill

	Norblo Off	Norblo On	Diff.
Separator Feed	270°F.	214°F.	56°F.
Separator Tails	270°F.	186°F.	84°F.
Separator Fines	260°F.	192°F.	68°F.

Size Mill	7′ x 30′
Approx. Capacity	110 bbls. per hour
Power Input to Motor	450 kw.
Temp. of Clinker	Approx. 140°F.
Temp. of Hercules mill product	Approx. 170°F.
Size separator	16′ Sturtevant
Speed	514 r.p.m.
Separator motor power	Approx. 80 hp.
Total weight of dust recovered by dust collector	6136 lbs. per hour or 16.3 bbls.
Volume of cold air to separator	Approx. 7000 c.f.m.
Volume of hot air from separator	Approx. 10,000 c.f.m.
Motor load for Norblo cement cooling fan	25 hp.



One of the two wet kominuters in which slurry is produced. Each carries a 12,000-lb. charge of steel balls.



Standard dust collectors are used for venting the two water-cooled mills.

Cement Storage Two batteries of cement storage silos have a combined capacity of 175,000 bbls.

There are two separate packhouses at New Orleans. The newer one was built recently to facilitate the handling of special cements as well as to take care of the recent increase in plant output. The new packhouse, which is modern in every respect, has two 4-spout St. Regis packers while the original packhouse continues to use 3-spout packers. Considerable cement is shipped by water, either sacked or in bulk.

Safety Lone Star is justifiably proud of having carried out its extensive expansion program at New Orleans without a single lost-time accident. This is in keeping with the plant's excellent showing, both in frequency and severity rate, over a period of many years. Regular dinner meetings are held, at which the men in the mill select inspectors to go through the plant and note unsafe conditions. Their findings are reported and acted upon at meetings held later in the mill itself. This excellent grass-roots program has helped to make the New Orleans mill not only one of the safest mills in the country, but also one of the cleanest.

Operating on a 24-hour, 7-day week basis, the Lone Star mill at New Orleans and St. Stephens employs about 375 men. In each day's operations the mill uses 2,000 tons of limestone and shale, 50 tons of gypsum, 9,500,000 cu. ft. of natural gas, and 100,000 kw.-hrs. of power.

General superintendent of Lone Star's Southern Division is Arthur D. Stancliff. Webster W. Deadman is plant superintendent at New Orleans and Robert D. Glenn is assistant superintendent. Joseph G. Gunn is chief chemist, and Holger Fasting chief clerk and purchasing agent. Mr. J. G. McVay is in charge of the St. Stephens quarry.

Lehigh

(*From page 105*)

to be modified for truck haulage and this transition was made without loss of operating time. The stone is discharged from the trucks into the 42-in. McCully gyratory primary crusher. The 4½-in. product goes to a reciprocating screen with 2-in. perforated plate. Oversize goes via a pan conveyor to a Jeffrey hammermill. The product of this crusher, with the throughs from the screen, is carried on a second pan conveyor to bin storage of 1,600 tons capacity. A Leschen tramway with a capacity of 92 t.p.h. carres the stone across the Vermilion River a distance of 1050 ft. to the 20,000-ton storage at the cement plant.

The temporary but all-weather quarry roads are maintained with some of the crushed stone produced which is top dressed with oil. The Tournapulls are used to haul and spread this stone and a road grader helps maintain a smooth surface.

The old locomotive roundhouse was converted into a garage for the trucks. The trucks have enclosed cabs with heaters for cold-weather operation. In cold weather special electric heaters on the circulating water system of the trucks and Tournapulls insure easy starting.

Columbia Gypsum Products To Expand Facilities

Excavation has commenced for a $200,000 addition to the facilities of Columbia Gypsum Products, Inc., at Greenacres, Wash., according to H. A. Andrews, general manager. The new building, which will house a gypsum grinding and plaster plant, will be erected adjacent to the present plant.

The completed facilities will have a capacity of 500 tons per day of agricultural gypsum for commercial fertilizer, cement rock, plaster, wall board and lath.

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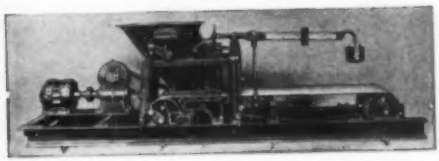

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Streamline Portland Cement Plant

THE Kennedy-Van Saun Manufacturing & Engineering Corporation, New York City, believing that there is a need for a sound basic design for cement plants, has developed such a plan which is called the "Streamline." Patents covering this design have been applied for in all of the important countries throughout the world and to date have been granted in many of them.

In this design it was attempted to include all of the basic elements necessary to insure a portland cement plant that will be modern and flexible; that may be built at a minimum cost; and that will be able to easily produce all modern types of cements of the highest quality at a minimum cost of operation and maintenance.

In it have been combined the best of the modern departmental flow-sheets with the use of Kennedy-Van Saun machinery and equipment. The various process departments and supporting facilities have been located in a logical and simple manner along the sides of the bulk material storage structure, which is the heart of the plant.

Each department has been so designed and so located that it may be expanded many times in capacity without interfering in any way with the continuous operation of the plant and without encroaching upon the areas allotted for the growth and expansion of any other department.

This has been accomplished without sacrificing any of the overall plant efficiency from an operational or labor use standpoint. In fact, the location and grouping of departments is designed for the use of a minimum number of man-jobs which is of vital importance in these days of high labor rates. Even though Kennedy-Van Saun is now building many new plants in areas where labor rates are low, experience has shown that low labor rates do not stay low. We therefore want all plants designed or built by us to be able to remain in a competitive position in spite of any future changes in the years to come. In addition, many of the plants now being built are small in capacity compared to United States standards. This makes it even more important that labor use be reduced to the absolute minimum by proper design since labor cost becomes such an important factor in the manufacturing cost of small plants.

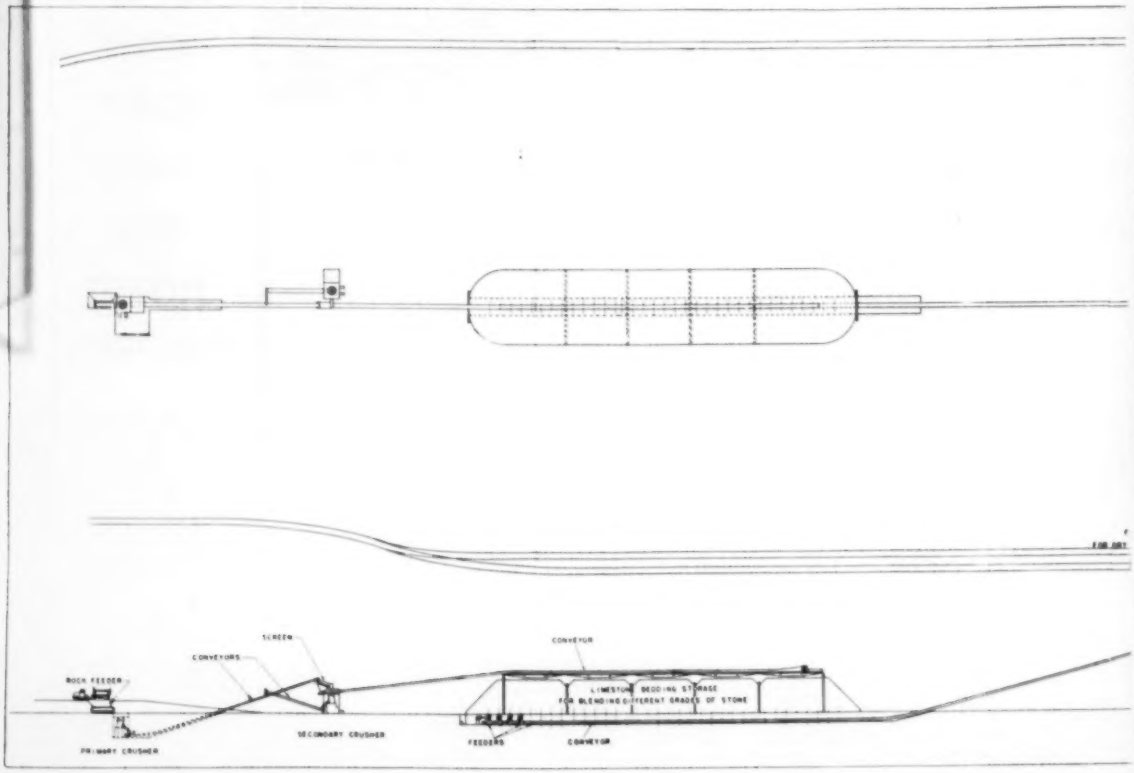
The design of the buildings has been made as simple as possible to reduce this part of the cost of construction to a minimum. The walls of the buildings may be easily varied to suit climatic conditions found anywhere in the world without affecting the basic design of the plant itself.

Power use has been carefully studied and has been reduced to the lowest practical point by the use of the most efficient flow-sheets for each department.

The design of each department and the selection of the machinery and equipment has been based upon a proper balance between operating efficiency, cost of maintenance, and capital investment. Wherever applicable full advantage has been taken of the economies of closed circuit operation to obtain the maximum production with the minimum investment for machinery and equipment.

In every department the operation has been made as automatic as possible to provide the maximum control of quality throughout the plant and to reduce the number of skilled operators as much as possible.

One of the features of the "Streamline" plant design is the simplification of the transportation equipment throughout the plant. With the exception of one inclined pan conveyor and one screw conveyor there are no other mechanical material conveyors within the plant proper. The seven belt conveyors shown to deliver



the raw materials to the bulk material storage structure comprise the entire remaining mechanical conveying group and these are trouble-free.

The accompanying drawing illustrates a typical wet-process "Streamline" portland cement plant. Should the use of the dry-process be indicated no basic changes in design are required other than the substitution of dry raw material storage and blending silos for the slurry thickeners and slurry storage and blending basins shown.

It is realized that no single design can be used for the construction of all plants but it is believed that the basic design can be used in most cases and that slight variations from it will take care of all special conditions imposed by property limitations or topography.

A detailed description of each department follows:

Limestone Preparation:

It is contemplated that the limestone quarry will be equipped with all of the modern equipment necessary to produce this raw material as cheaply as possible and to deliver it to the limestone crushing plant.

A crusher feeder has been provided to insure the maximum output from the primary crusher. The primary crusher will be of suitable size to work with the shovel dipper, and will be operated in open circuit. The primary crusher product will be conveyed on an inclined belt conveyor to a vibrating screen above the secondary crusher. This screen and the secondary crusher will be operated in closed circuit. The oversize rejected by the screen will drop into the secondary crusher, and the secondary crusher product will be deposited upon the first belt by a second inclined belt conveyor for rescreening.

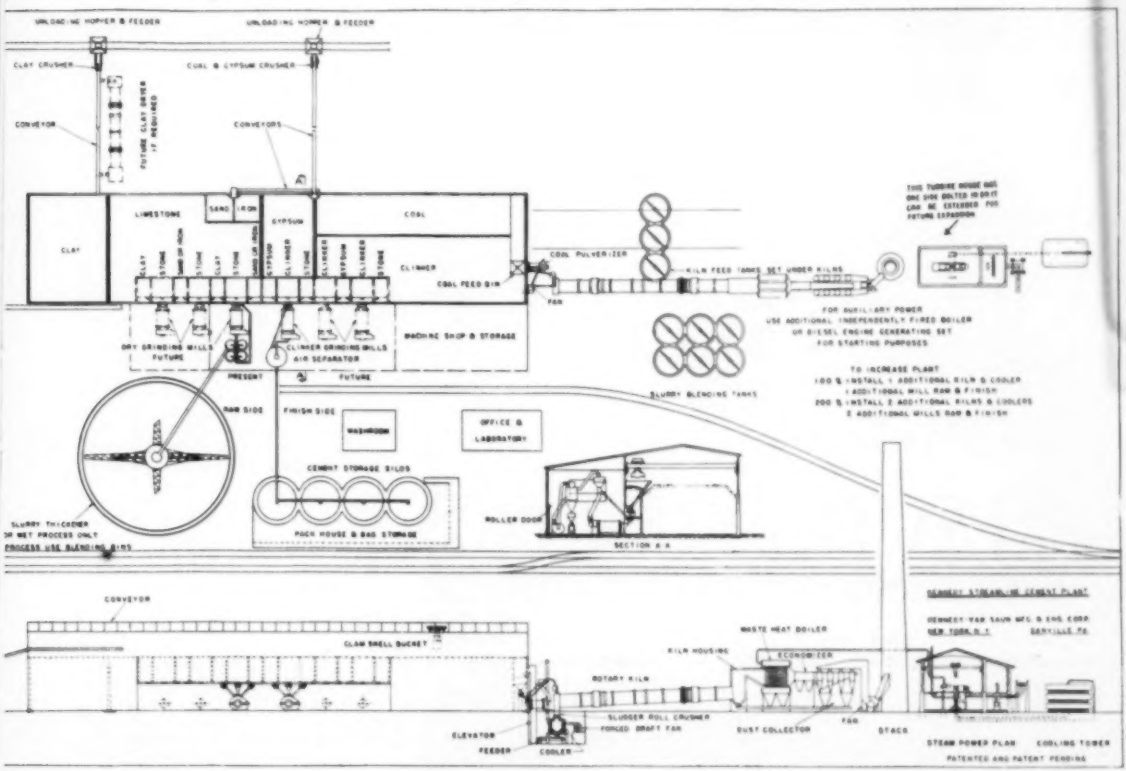
The vibrating screen will be equipped with a fine screen cloth to insure that all finished product will be suitable for grinding mill feed, which is about ½ in. and finer. This finished crushed limestone will be conveyed on a third inclined and horizontal belt conveyor to the top of a bedding or blending pile where it will be deposited in thin layers along the length of any section of the pile by means of a self-propelled, reversing, travelling belt conveyor tripper. Normally the limestone high in calcium carbonate content will be spread over one section of the pile and the low calcium carbonate limestone in a separate section.

Underneath the length of the bedding pile is a tunnel in which are located a battery of specially designed disc feeders spaced on centers of about eight feet. These feeders simultaneously withdraw the crushed limestone from the entire length of each section of the bedding pile. This operation results in the elimination of extreme variations in the chemical composition of the limestone in each section of the bedding pile which may be caused by variations in the quarry limestone deposit.

By regulating the rate of feed to each disc feeder the chemist may accurately control the lime content of his mix at this point. All of the disc feeders discharge onto a fourth horizontal and inclined belt conveyor which deposits the blended crushed limestone into the grinding mill limestone feed bin or into the reserve limestone storage area of the bulk material storage structure where it will be handled thereafter by the crane.

Separate receiving hoppers, crushers, and belt conveying equipment have been provided for handling the other necessary raw materials or coal required for the operation of the plant and will deposit these materials into the allotted storage areas for such materials in the bulk material storage structure. This bulk material storage structure is served by an overhead travelling crane equipped with a clam shell bucket of suitable size. This crane will handle all bulk materials not pulverized. The entire structure will be covered by a roof and should be completely enclosed on the sides, and be ventilated.

The bulk material storage structure provides ample space in a central location for storing and blending and handling adequate reserve stocks of each raw material required for the operation of the plant. This insures the uninterrupted operation of the plant in spite of



"Cement Clinker Grindin'??

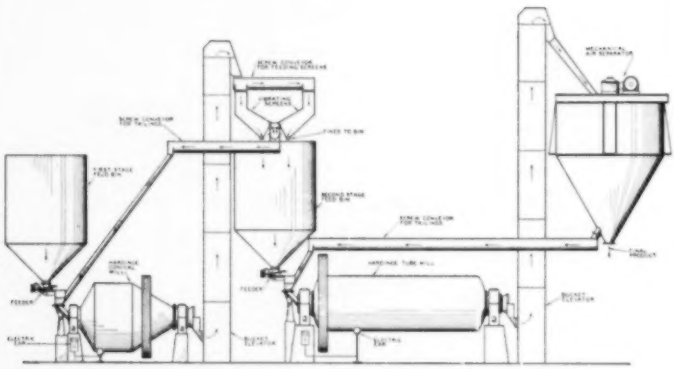
. . . easy!"

"Shure, whin ye use a Hardinge grindin' hook-up like I got here, there's nothin' to it.

"I put me raw clinker through a 10'x48" Hardinge Conical Ball Mill. The discharge cones shoves me fines through as fast as they're made. Vibratin' screens return me oversize to the mill. That gits me down to minus 20 mesh.

"Thin I put me stuff through a Hardinge 8'x26' Ball Tube Mill in closed circuit with a air separator which takes me down as fine as I want. I kin push through 125 barrels of cement an hour easy as pie!

"If ye need some dope on cement grindin', jist write Hardinge. Ask 'em fer Bulletin AH-377-8."



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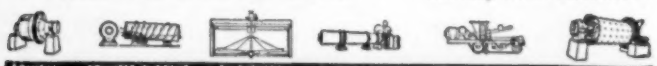

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bad weather or delays in the delivery of any of the raw materials to the plant.

Raw Material Grinding:

In this design the raw material grinding machinery and the clinker grinding machinery is grouped in a single building built as a lean-to against the side of the bulk material storage structure. This reduces the cost of construction and allows the minimum use of operating labor.

In the bulk material storage structure, in front of each grinding mill, are a series of three raw material feed bins. These are served by the storage crane. One bin will be used for crushed limestone, one for crushed clay or shale, and one is for sand or iron if required for any type of cement. Under each bin is a feeder. Each feeder discharges directly into the feed end of the grinding mill. The feeder speeds are automatically controlled by the controls provided on the grinding mill. These proportioning feeders may be operated singly or with one or both of the other two so that each raw material may be ground separately or in combination with others as may be desired.

In special cases in wet-process plants a clay wash mill will be necessary to properly handle certain types of wet or sticky clay. This can be added without in any way detracting from the basic plan.

The wet-process grinding mill shown will be operated in closed circuit with suitable wet classifiers in order to obtain the maximum output with the minimum power input per ton of finished material. This closed circuit operation with its greater output per KWH also reduces the capital investment for grinding mills as smaller mills will be supplied to do the same amount of work as that done by larger and more expensive grinding mills operated in open circuit. In addition the raw material fed to the kiln from a closed circuit grinding mill is better prepared for use in the kiln. This is because all of the coarse particles found in all open circuit grinding mill product has been eliminated and the extremely fine particles have also been largely eliminated. These fine particles are usually lost out of the kiln stack.

The coarse underflow from the wet classifier is returned to the feed end of the grinding mill by gravity. The fines overflow from the classifier in the form of a thin slurry which flows by gravity or is pumped to a slurry thickener where the excess water required for closed circuit grinding and close classification is recovered. The thickened slurry is then pumped to agitated slurry storage tanks where it is analyzed and then blended and pumped to the kiln slurry feed tank. The various raw materials may be stored separately, which is very desirable if many types of cement are required, or may be stored mixed as desired. The number of slurry storage tanks required is determined by the requirements of the plant in each case.

In case the plant is a dry process plant the raw material grinding mills will be

operated in closed circuit with special air classifiers which will reject all oversize particles and return them to the feed end of the mill by gravity for regrinding. The grinding mill in this case will normally be of the air-swept type with oversize trunnions at each end of the mill. A suitable exhaust fan will draw air through the mill in controlled quantities and velocities. This air stream will remove the finished material from the inside of the grinding mill as rapidly as it is produced and will carry it up through the special air classifier. Only finished material is carried out of the classifier in the air stream. After leaving the classifier the finished material and the air are passed through a cyclone collector which removes most of the finished product from the air. The final cleaning of the fine dust from the air is accomplished by means of a cloth-bag-type dust collector equipped with a suitable humidity control device. The finished raw material from the cyclone and from the cloth bag collector is deposited in a surge bin over a pneumatic transport pump which moves it through a pipe line to the dry raw material storage and blending silos. In these silos it is blended by compressed air agitation, analyzed, and then pumped to the kiln feed bin as required.

Should it be necessary to dry the raw materials a separate furnace is provided to supply hot gases which are drawn into the grinding mill and which dry the fine raw material in the mill.

Burning:

Whether the plant is a wet-process or dry-process plant the prepared raw material is fed into the feed end of the kiln by means of volumetric measuring and feeding devices the speed of which is controlled by the speed of rotation of the kiln. In either case it is highly important that each revolution of the feeder delivers a constant weight of raw material in spite of changes in the water content of the slurry in the wet-process or in spite of changes in the air content of the dry raw material in the dry-process. Every facility is provided to insure that a constant weight is delivered.

The rotary kiln furnished will be of the proper diameter and length to insure the production of the desired quantity of well burned clinker with a minimum use of fuel. The dry-process kiln will normally be furnished shorter than the kilns furnished for wet-process plants as the latter require the additional length to evaporate the water in the slurry.

If operated with waste heat boilers for generating steam for power purposes the kiln lengths are reduced, but never beyond the point that will insure a well-burned clinker. Shortening the kilns results in increased fuel consumption per barrel of clinker and in a wet-process kiln it is best to install slurry filters to partially dewater the slurry when waste heat boilers are to be used. The additional fuel required in the shorter kilns is much less than the fuel required to produce the same amount of steam in a separate fuel-fired boiler so that an overall saving is the result in the cost of cement.

At the feed end of the kiln a multiple

MORE BINS

. . . the storage answer to (1) shortage of carriers
(2) delayed cleanout of specification cement bins
(3) stoppages of production for lack of storage space

A cement mill represents a big capital investment. Producing and moving cement—*day in, day out*—is the only way to get a return on this investment.

What are you going to do about steady production when shortages of carriers prevent shipments of specification cement already in the bins or when jobs within your shipping area call for different cements? Specification cement bins can't be used for any other cement *until* empty. BUT, a new set of NICHOLSON BINS—designed and constructed with the customary skill and speed of NICHOLSON crews—can soon remedy the situation in your mill. A letter or call to our office will start your "MORE BIN CAPACITY" program at once.

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Pneumatic Distribution System (circular picture above) for the NICHOLSON BINS in one of the Lehigh Portland Cement Company's plants along the Hudson River.

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cyclone-type dust collector, an induced draft fan, and a louvre damper are supplied to reduce dust losses through the stack and to control the draft at the firing end of the kiln within very narrow limits. Provision is made for collecting the dust recovered in the kiln feed housing, the cyclone collector and from the stack and return it either to the kiln feed bin or to the raw material grinding department.

At the firing end of the kiln the finished clinker is discharged into a recuperator called a clinker cooler whose function is to recover and return to the kiln as much as possible of the heat carried out of the kiln in the clinker. An added function of this cooler is to improve the quality and grindability of the clinker by rapid cooling. The cooling is effected by passing air through the clinker bed in the cooler. After leaving the cooler the clinker is weighed and then crushed to minus-½-in. size and deposited in the clinker storage area of the bulk material storage structure.

Pulverized coal, fuel oil, and natural gas are the principal fuels used in rotary kilns. Other fuels are sometimes used when found to be suitable or cheaper. If coal is to be used Kennedy furnishes the Kennedy-Van Saun direct-fired air-swept coal drying and pulverizing tube mills, auxiliary equipment and coal burners. If fuel oil is to be used fuel oil storage tanks, heaters, meters, filters, pumps, and burners are included. If natural gas is used pressure regulators, meters, and gas burners are supplied.

A special kiln control panel is furnished on which are mounted all of the indicating, integrating, and recording instruments needed to insure intelligent and controlled operation of the kiln as automatically as possible at all times. Proper use of the instruments will result in the maximum output of well burned clinker at the lowest possible consumption of fuel.

Clinker Grinding:

The flow sheet of this department is similar to that of the dry-process raw material grinding department. Three material feed bins are provided in the bulk material storage structure for clinker, gypsum, and limestone or other third material required for special cements. There are three proportioning feeders under the bins which discharge directly into the feed end of the grinding mill. These feeders are inter-locked so that if the feed of any one material is interrupted all feeders stop. The grinding mill is operated in closed circuit with an air classifier identical with the one on the raw mill.

One of the important benefits resulting from "air-sweeping" the clinker grinding mill is the accurate control of the temperature of the finished cement produced. With the "Air-Swept" system the internal temperature of the grinding mill is kept at any practical point desired without the use of an external water spray. This elimination of high grinding temperature will result in greater output and in improved quality, and is of particular importance in the manufacture of fine ground cements of all kinds. The low discharge temperature of the finished cement allows it to be bagged and shipped immediately without the use of external cement cooling equipment.

A pneumatic transport pump and pipe line moves the finished cement to the finished cement storage bins where it is held for shipment.

Packing:

Pneumatic transport pumps and pipe lines move the finished cement from the storage bins to the packing room. By means of a cyclone type deaerator the transport air is separated from the cement. From the cyclone the cement passes over a vibrating screen to remove any lumps or foreign material and then enters the hopper over the packing machine. This is an automatic weighing and sack-filling machine which fills the sacks to the proper weight and deposits them onto a non-smearing woven wire conveyor belt. This belt operates with other belts to deliver the filled sacks either to cars or trucks or to a sacked cement storage. A cloth bag type dust collector is connected to all dusty parts of the operation to insure a clean and dust-free department. A conveying system is provided for collecting cement spilled from the packing machine and from broken sacks.

If cloth sacks are to be used a sack sewing, cleaning, tying, and sorting department is required and furnished.

(*Continued on page* 128)

MERRICK Long a Star Performer in the Cement Industry!

LONE STAR CEMENT CORPORATION

for SPEED, ACCURACY ECONOMY in Feeding Bulk Materials by Weight

LONE STAR Cement Corporation employs... MERRICK FEEDOWEIGHTS

★ As part of Lone Star's $2,000,000 expansion program at New Orleans, La., TWO MERRICK FEEDOWEIGHTS in tandem are employed to feed clinker and gypsum to a reduction mill in the grinding section of this modern cement plant.

In every industry that involves processing and handling bulk materials, MERRICK Weightometers and Feedoweights provide an accurate, automatic, and economical weight record, and help to assure product uniformity.

Detailed information about MERRICK'S Modern Weighing and Feeding Equipment is available upon request.

MERRICK SCALE MFG. CO.
180 AUTUMN STREET • PASSAIC, NEW JERSEY

It costs less to own the best

It's New *and it's* News!

THE KENNEDY "STREAMLINE" CEMENT PLANT....

DESIGNED BY KVS ENGINEERS this plant meets every need for a sound, basic design which includes every element and all facilities necessary for the efficient and profitable production of all modern types of cement.

IT CAN BE BUILT AT MODERATE COST: Here is a plant designed to produce uniform quality cement at minimum cost and with fewer operations. Equipped with rugged KVS machinery and equipment, it operates smoothly and effects important savings in man-hours and man-jobs. Every factor is provided to maintain a competitive position and operate economically for years to come.

See inside

EXAMINE THE PLAN: Note how every department is designed and located to insure streamlined handling of all materials and products. Note also, the arrangement of machinery and equipment; special attention has been paid to conservation of space, elimination of lost motion and the installation of a fast-moving production line.

OPERATIONS IN EVERY DEPARTMENT have been made automatic. This provides maximum control of quality by chemists and operators and reduces to a minimum the need for highly skilled help. The best of modern flow-sheets has been combined in proper combination to insure the utmost usage of all machinery and obtain maximum results from power.

SIMPLIFIED TRANSPORTATION EQUIPMENT has been specified throughout. Note that only one pan conveyor and one screw type, together with seven trouble-free belt conveyors comprise the entire conveying group. This radical departure is a real improvement over conventional conveying systems such as elevators and screw conveyors and will result in definite savings in time and money.

CHECK OVER THE MANY UNUSUAL FEATURES of this new cement plant. Note the systematic arrangement of handling and storing raw materials and finished products. The succeeding page lists many of these innovations. KVS engineers will be glad to explain every function and advantage included in the Kennedy "Streamline" layout.

→

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION
Two Park Avenue, New York

IT COSTS LESS TO OWN THE BEST!

SPECIAL FEATURES OF

THE KENNEDY "STREAMLINE" CEMENT PLANT....

ORIGINAL AND EXCLUSIVE ARRANGEMENTS OF DEPARTMENTS, HANDLING FACILITIES, MACHINERY AND EQUIPMENT, BUILDINGS

FLEXIBILITY IS ONLY ONE OUTSTANDING FEATURE: Future expansion of any department can be accomplished without interruption to regular daily operations. Additional machinery and equipment can be installed . . . extra space provided . . . more production handled readily through increased facilities . . . ALL at minimum expense and without loss of time.

THIS BASIC DESIGN CAN BE USED ANYWHERE with only slight variations to meet any special limitations imposed by property sizes or irregularities of terrain. Whether you wish to erect a completely new plant or modernize an existing layout, KVS engineers can adapt this plan to meet your precise needs.

ALL BUILDINGS ARE DESIGNED TO HOLD CONSTRUCTION COSTS DOWN: As a result, a typical plant can be erected, following this basic design, at minimum cost. Room for future expansion has been provided and wall construction can be varied to suit climatic conditions anywhere without affecting the basic layout or efficiency of any department.

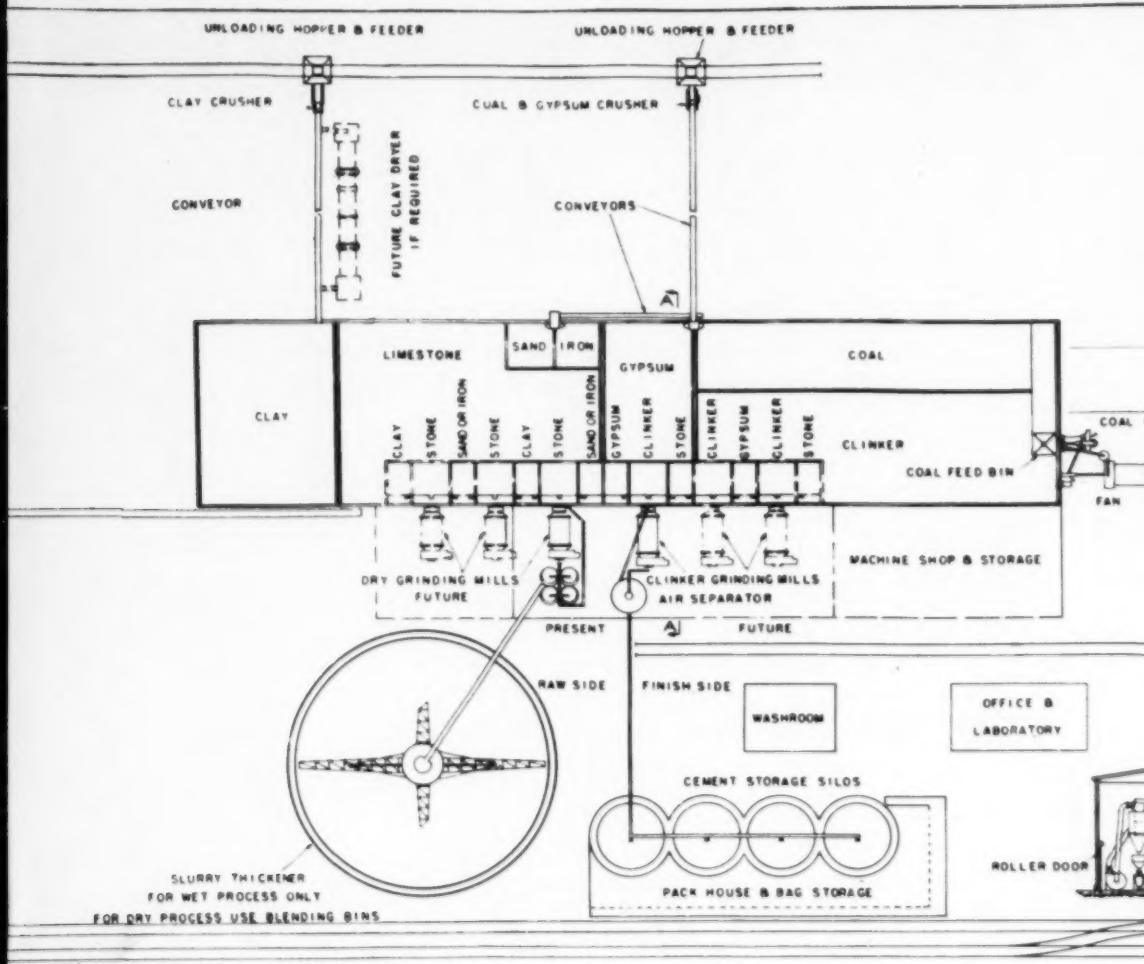
INCLUDED IN THE PLANT PLANS are provisions for the efficient use of primary and secondary crushers, limestone preparation, closed circuit grinding, screening, dewatering, burning, transportation and storage. In short, here are plans for a really **complete** plant which can be erected within limited areas and which is worthy of critical inspection.

A COMPLETE BULLETIN describing the function and placement of every piece of machinery and equipment in each department is available. In addition, the brochure gives a detailed explanation of the streamlined processes used in this scientific plant.

ANY CONCERN INTERESTED IN CONSTRUCTING OR REMODELLING a cement plant is invited to send for full information concerning this latest idea in modern cement production. Our brochure will tell you how and why such a plant is potentially the most efficient and profitable ever designed. It's further proof of the fact that "It Costs Less To Own The Best" when you specify KVS.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y.

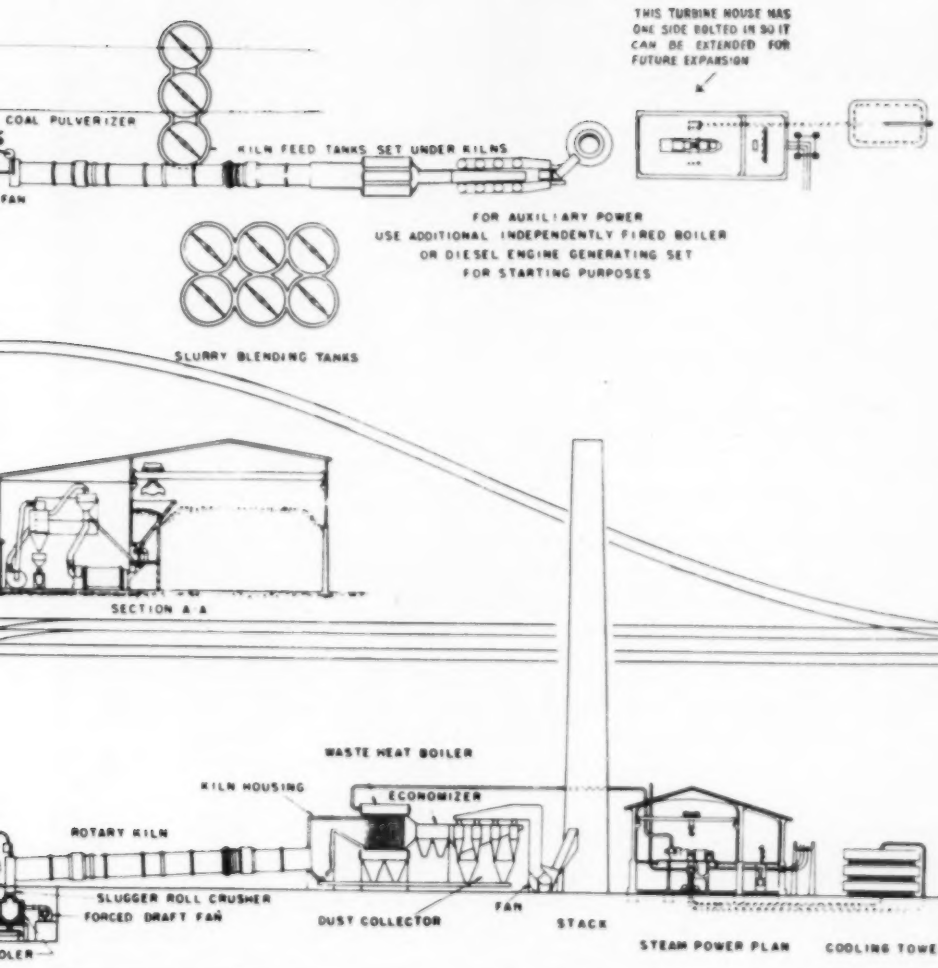


Primary and Secondary Crushers, Conveyors, Rock feeder and limestone bedding storage for blending grades of stone NOT SHOWN ON THIS PLAN. Marginal lines indicate locations.

TYPICAL KENNEDY WET-PROCESS
PORTLAND CEMENT PL

Patented; and patents applied for

To convert to DRY-PROCESS, the only change in
stitution of dry raw material storage and blending
and slurry storage tanks.



ESS "STREAMLINE" PLANT

nd for.

ge in plans shown is the sub-
ding silos for slurry thickeners

TO INCREASE CAPACITY OF PLANT

By 100% — install 1 add'l Kiln & Cooler
install 1 add'l Tube Mill for Raw & Finished Side

By 200% — install 2 add'l Kilns & Coolers
install 2 add'l Tube Mills for Raw & Finished Side

These additions can be added without interruption to operation of plant.

How to Check Engine-Flywheel and Housing for Trueness

By GEORGE PHEIL

The following indicator readings deviate slightly from S.A.E. recommendations. On some surfaces they are more liberal; on others, closer. These are practical field service recommendations. In general, adherence to S.A.E. specifications will be satisfactory.

The value of the diagrams is in the pictorial presentation of the placement of the indicator. Here, as is frequently the case, pictures are clearer and more helpful than words.

Nine steps for a routine checkup of an engine-flywheel and its housing for alignment follow:

1. Clean the flywheel and housing thoroughly.
2. Bolt the thousandths indicator or gauge to the flywheel so that it is perpendicular to the housing face and the indicator stem is riding on the flywheel housing face (see Figure 1).
3. The maximum deviation of the face of the flywheel housing flange from its true position when the flywheel is rotated on its axis shall be .005 in. (Total indicator runout, .010 in.)
4. Then readjust the indicator so that the stem will ride on the bore of the flywheel housing flange (see Figure 2).
5. The maximum eccentricity of the bore of the flywheel housing shall be .005 in. (Total indicator reading, .010 in.)
6. Remove the indicator bracket from the flywheel and bolt the indicator to the flywheel housing and check the flywheel runout.
7. The maximum variation of the surface to which the driving ring or clutch plate is bolted shall be 0.0025 in. (Total indicator runout, .005 in. See Figure 3.)
8. The maximum eccentricity for the pilot in the flywheel which pilots the driving ring or clutch plate shall be .0025 in. (Total indicator runout, .005 in. See Figure 4.)
9. With the indicator bolted to the flywheel housing, check the eccentricity of the pilot bearing bore in the flywheel. The maximum eccentricity for the bore in the flywheel for the pilot bearing shall be .0015 in. (Total indicator runout, .003 in. See Figure 5.)

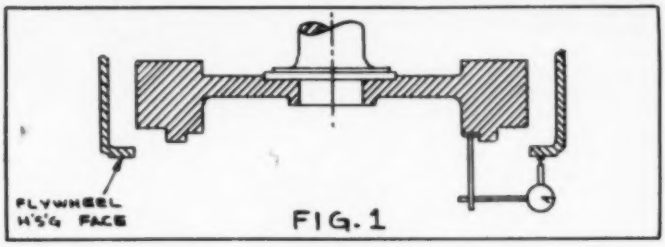


FIG. 1

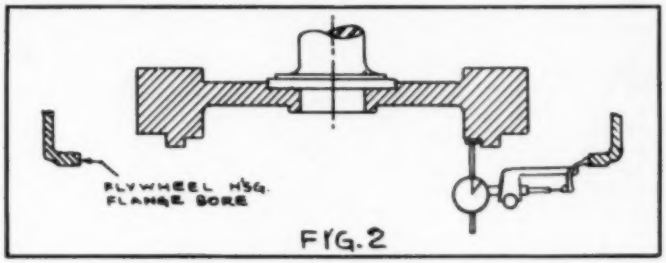


FIG. 2

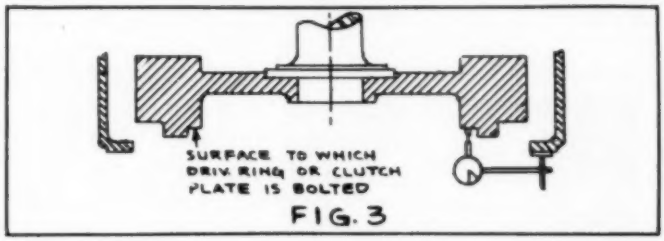


FIG. 3

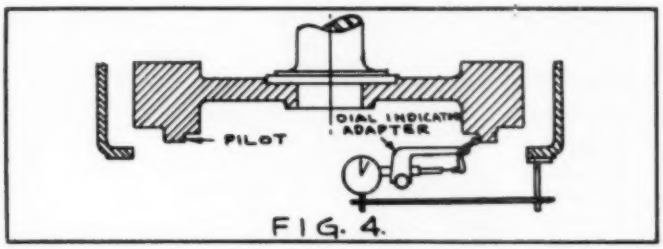


FIG. 4.

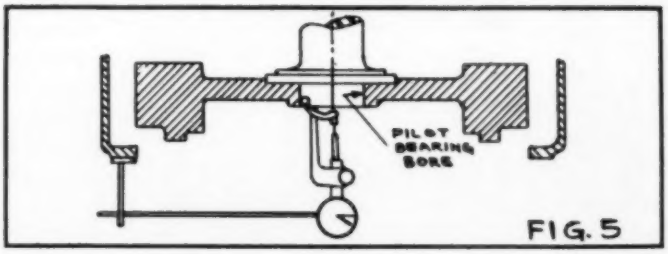


FIG. 5

Halliburton Mill

(*From page* 102)

also planned to use this modern handling system for a proposed 7,000-bbl. transport barge.

The Halliburton mill will be as self-sufficient as any in the industry, in respect to both raw materials and power. Both natural gas and fuel oil will be used for generating all the power required for operating the mill. It is contemplated that the natural gas requirements will be obtained from wells to be drilled by Erle P. Halliburton Company in the bay adjacent to the plant site. Two 2,000-hp. and two 1,600-hp. Fairbanks-Morse generating sets will be installed.

Representatives of the Halliburton organization credit the MacDonald Engineering Co. with having solved unusually severe foundation problems in carrying out their end of the project. Most of the more than 9,000 piles driven to date have been put down to a depth of 60 ft. in order to assure adequate bearing for the structures which they are to support. Despite the tremendous cost of the foundation work, efficient methods and careful planning have assured that the ultimate cost of the mill will be well within the normal estimating range of $4.50 to $6.00 per barrel of annual production.

The rotary kilns and some of the process equipment for the Corpus Christi mill were purchased from the War Assets Administration and reclaimed from an aluminum ore sinter plant constructed at East St. Louis, Ill., during the war. Some 400 tons of structural steel, dismantled and shipped to Corpus Christi, is being refabricated right on the job site for mill buildings.

Although the Halliburton Oil Well Cementing Co. itself uses close to 1,000,000 bags of cement per month, only a small part of the new mill's output will be utilized by that company. In the main the location of the mill was based on the steady industrial growth of the Corpus Christi area. The city itself now has a population of over 130,000, and it is said to be the fastest growing community in Texas. In the local cement market the output of the Halliburton mill will have a freight advantage over other plants in the area. The new mill is also ideally located for shipping by water into the Central and South American markets. For rail shipments the Southern Pacific, Missouri Pacific and Tex-Mex railroads are available.

Streamline Plant

(*From page* 122)

Facilities:

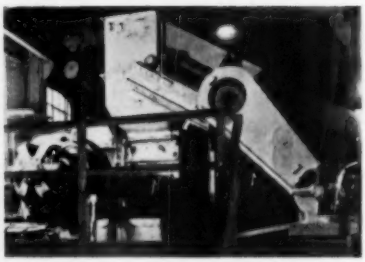
The buildings housing the office, laboratory, locker and sanitary equipment, shops and store room, have been combined as much as is practical to reduce initial cost. These buildings have also been strategically located.

Kitson Bros. Quarry In Full Production

Kitson Brothers Quarry at Cedar Hill, Mo., is now in full production, as has been announced by Norman Kitson, father of the owners and operators. Mr. Kitson states the new equipment installed some time ago has made it possible for the plant to furnish agricultural lime, road macadam and other types of rock products. Orders will be filled at the plant for self-delivery or the firm's trucks will make deliveries if so desired. The Kitsons also have a lime spreader for application of agricultural lime and will arrange for the use of this equipment.

The Great Northern Railway has announced plans for the construction of a crushing plant three miles west of Essex, Mont., this summer to produce crushed rock for roadbed ballast. Plans call for the laying of an 1875-ft. track and two sidings of 910 and 745 feet, as well as a cross-over at the plant.

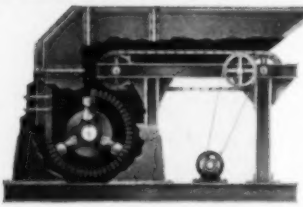
64 YEARS OF CRUSHER ENGINEERING TO GIVE YOU EFFICIENT PLANT SERVICE



GRUENDLER Heavy Duty Mills at DEWEY Portland Cement Co.

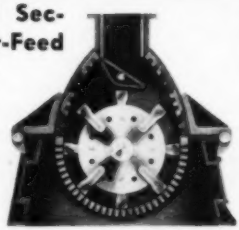
GRUENDLER Plant Design Recommendations are yours for the asking.

Available with or without integral FEEDERS



Primary IMPACT Hammer Mill handles shovel size rock. Available in capacities up to 500 tons per hour.

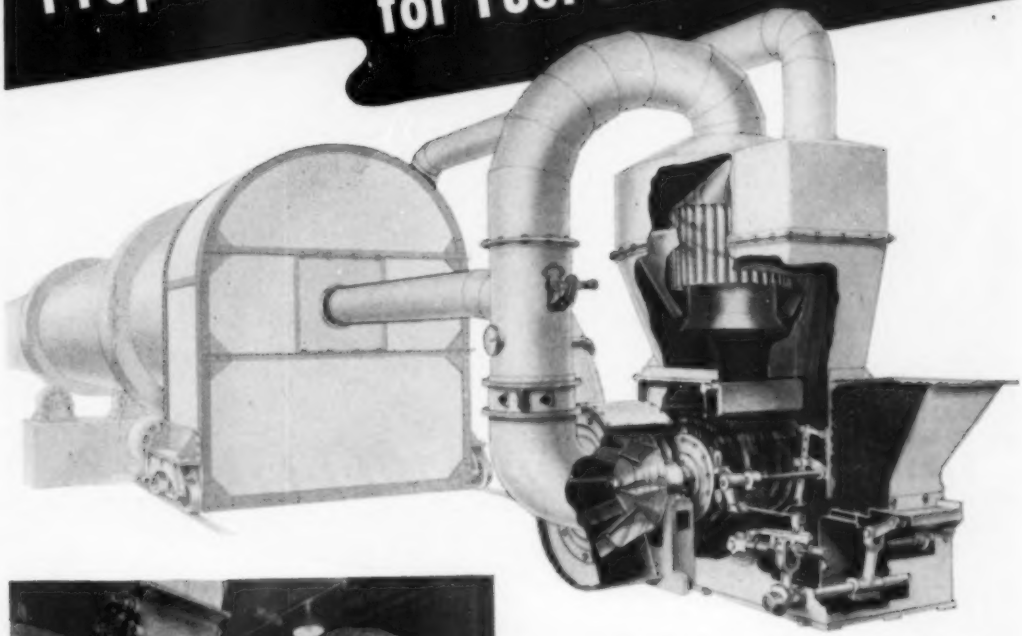
New Patented Secondary Center-Feed Hammermill available in capacities to 150 tons per hour. Ten (10) mesh minus.

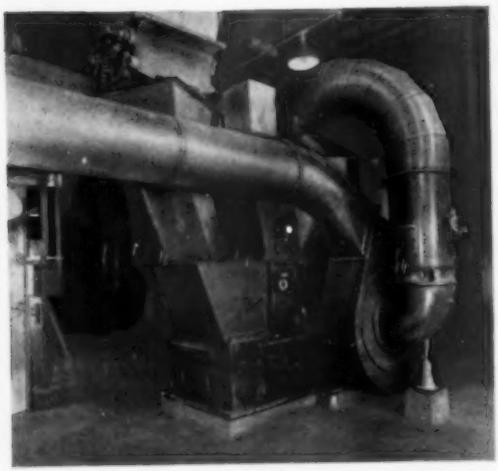


GRUENDLER CRUSHER & PULVERIZER CO., ST. LOUIS 6, MO.

Write Dept. P.Q.7 for ROCK BUSTER BULLETIN

Prepare NOW! for Fuel EMERGENCIES





Two 10,500 lbs./hr. pulverizers installed in MARQUETTE CEMENT's Nashville, Tenn. plant.

STRONG-SCOTT Unit Pulverizers are sold on a guaranteed rated-capacity basis which provides ample leeway in output, should they be forced to grind low-grade or "distressed" coal. Whether the moisture and ash content be high, or the grindability be low, the *full rated* output will be *continuously* obtainable.

These pulverizers, through which passes 30-40% of primary air, preheated, have a moisture-evaporating capacity obtainable by no other direct-firing mill.

Grinding by air-attrition, ample clearances in the grinding chamber, ample drop-out space for tramp-metal, all combine to assure positive feeding and freedom from clogging of wet fuel.

The STRONG-SCOTT Unit Pulverizer is the *best insurance* against operating and maintenance troubles, lowered capacity, or service interruptions *incident to post-war fuels.*

Ask any cement plant superintendent who owns one!

The STRONG-SCOTT Mfg. Co.

455 TAFT STREET N. E. • MINNEAPOLIS 13, MINN., U. S. A.

30%-50% lower crushing cost

with Williams "*Super-Slugger*" Crusher

BECAUSE POWER SHOVEL LOADED STONE IS CRUSHED TO 1½ INCH OR ¾ INCH . . . *IN ONE OPERATION!*

Here's the extra heavy-duty hammermill that spells that welcome word *economy*. Built by Williams, the pioneer of the idea of crushing quarry stone to small sizes in one operation, the new Super-Slugger represents the latest improvements and the accumulated experience of many years in building heavy-duty hammermills. Savings result not only in initial investment . . . cost of foundations, conveyors, drives and buildings, but in faster operation and lower power consumption. If you require high tonnage output and a machine that can "take it" your investment in the Super-Slugger will pay off in more "pay-load" . . . and more profit! Write for Bulletin 634 for detailed information of the newest Williams Super-Slugger.

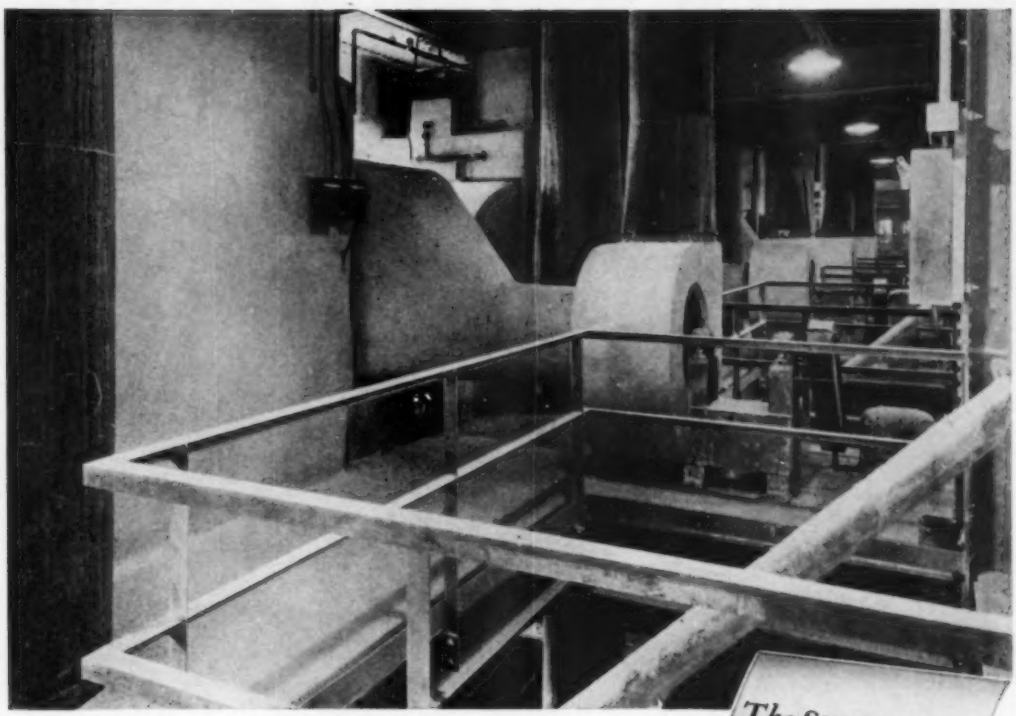
WILLIAMS ALSO MAKES . . .

Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
802 ST. LOUIS AVE. ST. LOUIS 6, MO.

Williams

CRUSHERS • GRINDERS • SHREDDERS



The Story Behind
KOPPERS-ELEX
Performance
GUARANTEE

KOPPERS-ELEX PRECIPITATOR RECOVERS MORE GYPSUM THAN GUARANTEED!

A LARGE gypsum plant, faced with the problem of controlling the disadvantage of gypsum dust, chose a Koppers-Elex Precipitator. Outstanding performance in excess of guaranteed results was obtained.

Under standard (A.S.M.E.) tests conducted during actual operating conditions, the precipitators on four calcining kettles limited residuals to .07 grain per cubic foot of gas—and the overall efficiency on the precipitators installed on the rock drier averaged 99.30%.

This performance, which exceeds the guarantee, is typical of Koppers-Elex operation. Correct design and precision engineering, coupled with the experience gained from over 1000 successful installations, give superior results in the recovery or removal of materials from gases. For the same superior performance in your plant, specify Koppers-Elex — designed, engineered, built, installed and guaranteed by Koppers...*with 111 years of reputation-building integrity behind it.* Koppers Co., Inc., Koppers-Elex Precipitator Department, 287 Scott St., Baltimore 3, Maryland.

1st with Industrial Gas Cleaning Equipment

Koppers-Elex KOPPERS

ELECTROSTATIC PRECIPITATOR

NEW

a major advance in the mechanical refinement of classification units

THE DORR HX CLASSIFIER—DUPLEX MODEL

...the Dorr TYPE H Classifier

◀ Chalk marking the rake path of a duplex Dorr HX Classifier in shop demonstration.

Type H Classifier rake path ▶ chalked on side of tank. Note flat raking and return strokes (A and C) and elliptical raising and lowering strokes (B and D). Regular pattern of rake path shows how rakes are synchronized both horizontally and vertically and balanced at all times.

Incorporating an entirely new and radically different headmotion design and rake path, the new Dorr Type H Classifier line represents a major step forward in the mechanical refinement of classification units. It offers many definite advantages over its predecessor, the Type F . . . yet retains all the features which have made the Dorr Classifier an accepted standard throughout the world.

Simplicity is the keynote of Type H design. It has few moving parts and the simplest Classifier lubrication system yet devised. It employs a fully harmonic raking motion and a long, full-load raking stroke. It is equipped with a hydraulic lift mechanism that provides more than 12 inches of rake lift in the pool. It is designed for *work* . . . for high efficiencies and low operating cost.

Bulletin #2281 gives complete information on this radically different unit. Write for your copy now . . . or better still, have a Dorr engineer show you what the superiority of Type H design means in terms of your own operation. No obligation, of course.

DORRCO

THE DORR COMPANY, ENGINEERS
570 LEXINGTON AVE., NEW YORK 22, N. Y.
ATLANTA • TORONTO • CHICAGO
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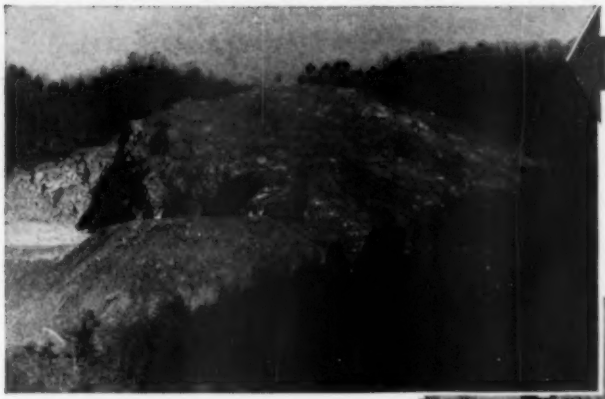
ASSOCIATES AND REPRESENTATIVES
Dorr Technical Services and Equipment Are Also Available Through Associated Companies and Representatives in the Principal Cities of the World. Names and Addresses on Request.

DORR

RESEARCH ENGINEERING EQUIPMENT

LARGEST COMMERCIAL BLAST USES 1,362,985 LBS. OF "NITRAMON"*

Produces estimated 1,800,000 cu. yds. of rock fill for T.V.A.'s South Holston, Tennessee, Dam



BEFORE 5,254 lineal feet of coyote tunnel were driven into the base of a huge hill of stratified sandstone. Three main adits with a total of 44 cross-cuts were required. Charge was divided into 190 units totaling 55,452 cans of "Nitramon" and 436 "Nitramon" primers, connected by about 4 miles of Primacord. Loading was accomplished in 17 working days.

DURING Photo at right, taken just after the blasting switch was thrown, shows the whole burden of this record blast at the height of its lift. Note that the trees in the background are hidden by the crumbling hill.

AFTER Nearly two million cubic yards of well broken rock, ready for the shovels.

This is the fifth, and largest, of a series of six coyote tunnel blasts made with "Nitramon" in the same general locality.

1.	September 11, 1947.....	316,486 pounds
2.	November 8, 1947.....	526,925 pounds
3.	March 11, 1948.....	422,563 pounds
4.	July 14, 1948.....	844,503 pounds
5.	February 5, 1949.....	1,362,985 pounds
6.	April 16, 1949.....	501,112 pounds
		3,974,574 pounds

For safety, efficiency, and economy in your quarry operations, look into the use of Du Pont "Nitramon." Ask your Du Pont Explosives Representative for full information. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

DU PONT "NITRAMON"

A Product of Du Pont Explosives Research

*Reg. trade mark for Du Pont nitrocarbonitrate blasting agent.

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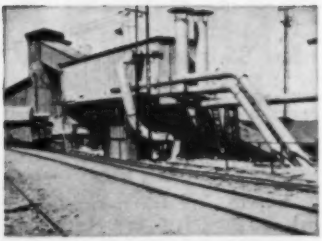
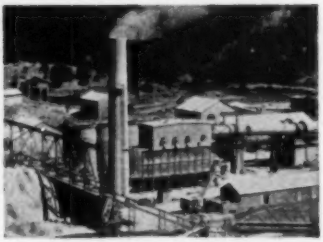
DU PONT

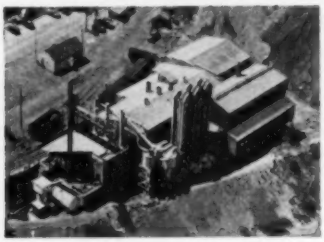
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Norblo

AUTOMATIC
Bag Type
Dust Collection







. . . for Star Performance at Low Cost

1. Basic unit compartment houses 78 cylindrical cloth bags — fully distended by upward inside air flow.

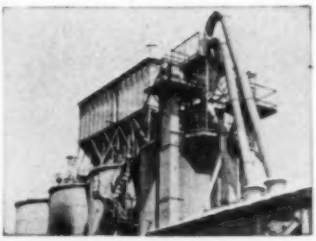
2. Shaking and cleaning involves only one compartment at a time, and only a few seconds out of each hour of operation.

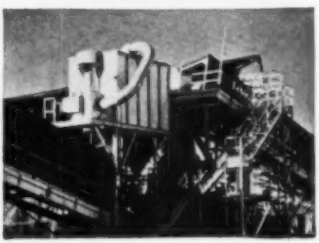
3. Variable timing of cleaning cycle according to dust load insures constant volume of air handled and of dust collected.

4. During shaking period air flow is reversed, loosening dust and accelerating its descent into the hopper.

5. Any compartment may be cut out of operation for repair (from the clean air side) with all other compartments continuing in operation. Adjustment of shaking timer for dust loading can be made in a few minutes without shutting down.

Norblo equipment is completely designed and fabricated in our own shops and sold on the basis of guaranteed performance. If you need dust collection for production, for salvage, for good housekeeping ask Norblo engineers what they can do for you. Let us send you Norblo Bulletin 162-4.





The Northern Blower Company

6407 BARBERTON AVENUE • CLEVELAND 2, OHIO

Automatic and Standard Bag Type Fume and Dust Collectors
Norblo Centrifugal and Hydraulic Collectors
Cement Air Cooling Systems, Exhaust Fans

Over 100 Times Longer Service in...

- Conglomerate
- Granite
- Iron Ore
- Basalt
- Sandstone
- Bluestone

In Eastern Pennsylvania conglomerate, Kennametal 2 inch Rock Bits used on drifters drill 110 times longer, 23% faster than steel bits, and lower bit cost 37% per foot.

In Southern Virginia granite, Kennametal 2¼" Rock Bits last 150 times longer, drill 350 feet per bit, and increase the footage drilled per drifter over 50% per shift.

For drifter service in upper Michigan iron ore, Kennametal 1¾" Rock Bits drill 185 times longer and average nearly 300 ft. per bit.

On a wagon drilling job in Central Pennsylvania, Kennametal 2¼" Rock Bits drilled 250 times as long as steel bits and saved $100,000 on drilling costs.

For drilling sandstone in Northern West Virginia, Kennametal 2¼" Rock Bits gave 330 times longer service, drilled 33% faster.

Kennametal 2¼" Rock Bits used on wagon drills in Western Pennsylvania drill 150 times farther and give 900 feet of drilling per bit.

with SUPER ~~TOUGH~~ Kennametal Rock Bits

—and they give you these money-saving, profit-making advantages:

- Less strain on machines, big reduction in maintenance cost
- Better blasting, less money for explosives
- More footage drilled per shift
- Greatly reduced bit cost per foot
- 25% to 50% faster drilling
- Less bit changing and bit handling

Send for complete particulars

Mining Division
Kennametal Inc., Latrobe, Pa.

KENNAMETAL

Trade Mark Reg. U. S. Pat. Off.

Rotary Drill Bits • Core and Drag Bits • Rock Bits

Write for this

HELPFUL BOOKLET

KENNAMETAL Inc., Latrobe, Pa.

Please send me a free copy of Booklet on drilling

NAME _____

POSITION _____

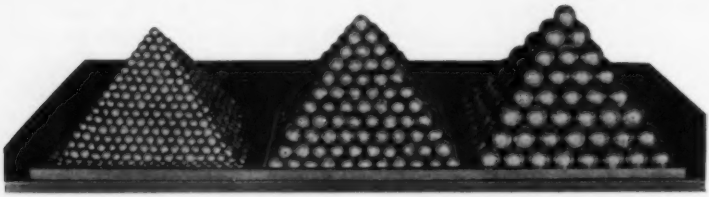
COMPANY _____

ADDRESS _____

Also send information on:
Rotary Drill Bits ☐ Core and Drag Bits ☐

IT COSTS LESS TO OWN THE BEST!

GRINDING COSTS CAN BE CUT AS MUCH AS 50%



XX HERCULITE STEEL GRINDING BALLS

The hardest, toughest substance known
WILL HELP YOU DO IT!

KVS CHEMISTS HAVE DEVELOPED A SPECIAL ALLOY — far superior to ordinary metals — that produces absolutely uniform quality grinding balls that last longer.

MADE OF XX HERCULITE STEEL these balls have a hardness of approximately 600 Brinell outside and 583 inside which eliminates the high percentage of breakage common in ordinary chilled or forged steel types which are only hard outside with soft centers, and XX Herculite Steel Balls retain their original round shape. Here's a new and improved product that saves time and dollars.

THE PRICE IS LOW TOO: KVS engineers designed and built a new, special type machine to mould these balls which replaces the obsolete, costly hand molding method. Our scientific, mass production process makes it possible to furnish a superior product at a price no higher than you now pay for less efficient balls. They are available, promptly, in 1¼", 2" and 3" sizes, in carload lots, or less.

USED IN CONJUNCTION WITH THE KVS AIR SWEPT TUBE MILL, tests show that maintenance costs with bituminous coal hold costs to 2c per ton. Coal can be pulverized to a degree where it burns like gasoline. Here's proof that "It Costs Less To Own The Best." A KVS engineer will quickly demonstrate how the use of these XX Herculite Balls will cut YOUR grinding costs as much as 50%.

EVERY PRODUCER OF AGGREGATES is interested in reducing costs. We have figures available that will convince you immediately that by replacing old-style balls in your mill with KVS XX Herculite Steel Balls, you can increase your grinding efficiency and decrease your ratio of maintenance.

Send for prices, terms and full information regarding this new, money-saving grinding media. Our bulletin gives full details.

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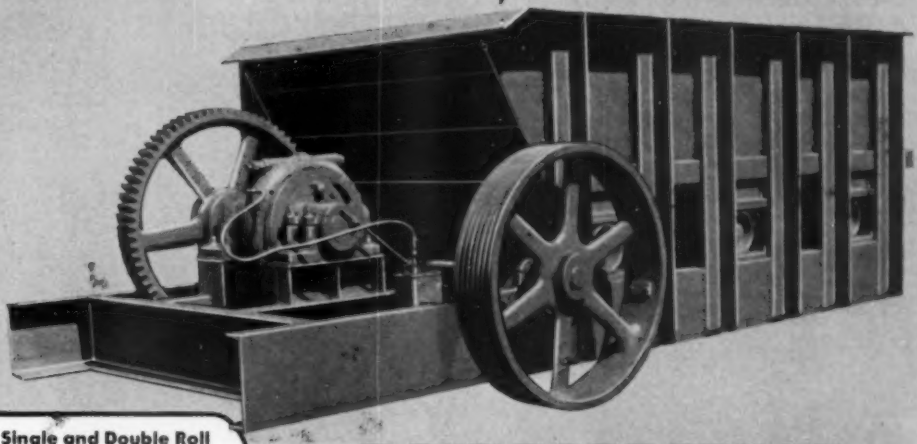
TWO PARK AVENUE NEW YORK 16, N. Y.

For Economy in handling TONNAGE...

from the size of SAND TO shovel loaded ROCK



- Single and Double Roll Crushers (Primary and Secondary)
- Heavy Duty Rock Crushers — Automatic Steelstrut Toggle, Quick Adjustment and Pioneer series
- Double Roll Fabricated Steel Crushers
- Jaw Crushers
- Portable and Semi-Portable Crushing Plants
- Dry Pans Super Heavy Duty
- Conveyors
- Dryers of Revolving Type
- Elevators
- Feeders
- Hoists
- Ore Jigs
- Screens
- Washers & Scrubbers
- Special Machinery and Complete Plants

McLANAHAN

HEAVY DUTY

RECIPROCATING PLATE FEEDERS

Heavy duty McLanahan Reciprocating Plate Feeders are quickly adaptable to the producing capacity of any machine. These self-contained feeders *automatically control the flow of all kinds of materials,* from sand to shovel rock. Special design protects the bottom plate and pan, so the hopper may be completely filled without danger. Although rugged in construction, they require surprisingly little power. Through *increased production and lowered overhead,* McLanahan Reciprocating Plate Feeders easily pay for themselves in a short time. Write for descriptive bulletin.

Headquarters for Pit, Mine and Quarry *Modernization*

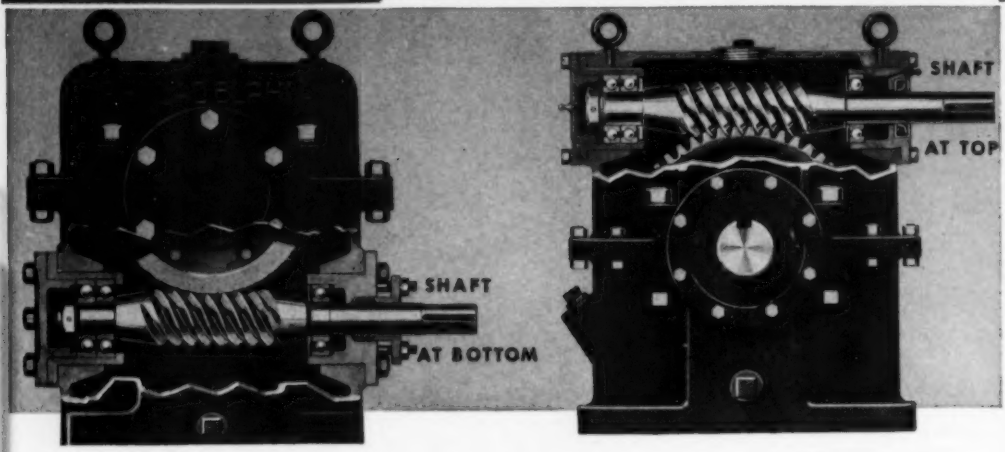
McLANAHAN and STONE Corp.

HOLLIDAYSBURG, PA.

Since 1835

Philadelphia WORM GEAR REDUCERS . . .

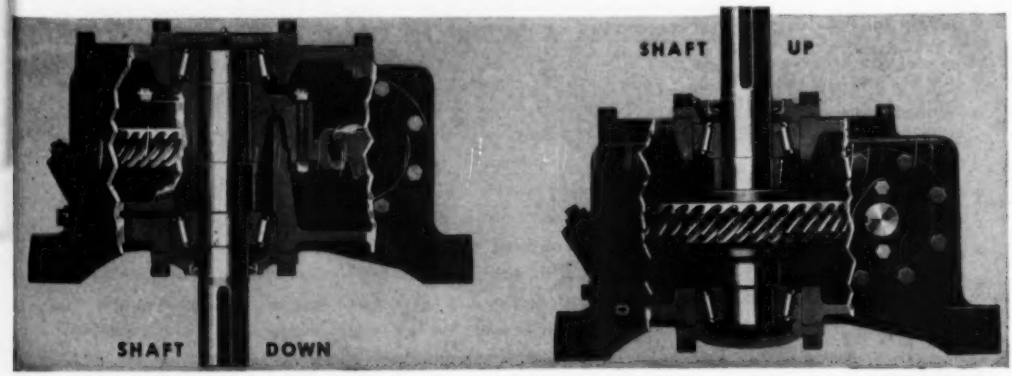
. . . OFFER A TYPE AND SIZE FOR EVERY INDUSTRIAL REQUIREMENT



Scientific design, unexcelled workmanship, best materials, rugged construction, noiseless and vibrationless operation, long life, minimum maintenance and dependable performance — these are some of the qualities that have earned an enviable reputation for this outstanding line of Speed Reducers.

As a Pioneer in the field, Philadelphia Gear Works has, by continuous research and experimentation, developed many important refinements which are exclusive with this line. They represent a new peak in the design and efficiency of worm gear speed reducers, which is attested to by their daily performance in hundreds of plants throughout the world.

For full information, write for our *Worm Gear Reducer Catalog* No. 26, and please use your Business Letterhead when requesting it.



Philadelphia Gear Works, INC.

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NEW YORK • PITTSBURGH • CHICAGO

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Industrial Gears and Speed Reducers
LimiTorque Valve Controls

greater economy

more production

it pays to replace with these explosives

better breakage

More and more, Hercules Gelamites* and Hercomites* are replacing older-type explosives. There's a reason. They are more economical to use than the earlier extra dynamites and gelatins. The handy Tamptite cartridges made in all sizes regularly used for mining make "slitting" unnecessary and save powder. For further information, write for new booklet, "Hercomites and Gelamites for Lower Blasting Costs."

HERCULES POWDER COMPANY

960 King Street, Wilmington 99, Delaware

Reg. U. S. Pat. Off.

Pioneers in Conveying Dry

Fuller Company holds a unique position in the field of conveying many materials with air, much of its equipment being used in practically all parts of the industrial world.

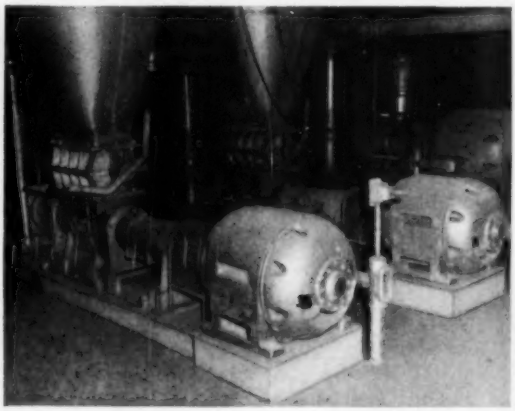
FULLER-KINYON CONVEYING SYSTEM: This system was the first to convey, with air, pulverized coal, in a clean and efficient manner, without explosion and fire hazards, so prevalent in previously used mechanical systems; also cement raw materials, and finished Portland cement. Today over 96 percent of the Portland cement plants in the United States use one or more Fuller-Kinyon Systems for conveying cement raw materials and finished cement, while many plants still use this system for conveying pulverized coal to dryers and rotary kilns.

FULLER-FLUXO SYSTEM: Recommended for conveying Portland cement over extremely long distances. This equipment was used on many large dams constructed in recent years, such as, Hoover, Shasta, Friant and Grand Coulee. On the latter project, cement was conveyed from storage to mixing plant, a distance of approximately one and one-quarter miles.

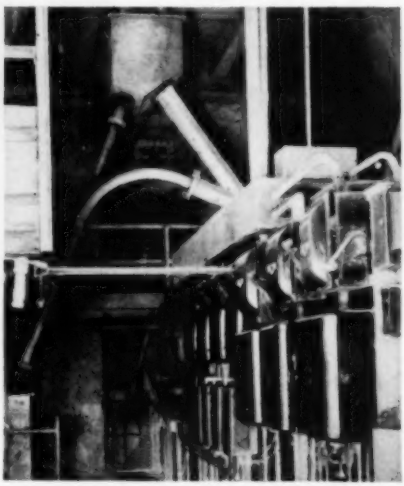
AIRLIFT . . . CONSTANT-HEAD FEEDER: This device is employed for elevating, conveying and feeding dry pulverized materials which have been placed in a semi-fluid state by means of aeration. When used only for elevating materials, it is designated as an Airlift. When it is used to deliver material to a screw feeder, rotary feeder, or spout, in such a manner that a constant head of material exists above such equipment, it is designated as a Constant-Head Feeder.

F-H AIRSLIDE: The most recent acquisition to the Fuller family, is a most unique conveyor for transporting fine, dry materials, without the use of moving parts. Nothing moves but the air and material. Materials really flow like water. Aerated with low-pressure air, materials flow, by gravity, on a slightly inclined porous surface. It comprises a lower channel, forming an air chamber, having an upper surface of porous material, usually a heavy fabric, upon which the material flows in an upper channel. A novel feature of the design is the porous surface of low-air permeability, which assures uniform distribution of low-pressure air.

This equipment has been used to convey materials, such as, gypsum, soda-ash, baryte, bentonite, flour, lime, fly-ash, iron ores, Portland cement and cement raw materials.



Two Fuller-Kinyon Stationary Pumps, in a cement plant in the West, for conveying Portland cement from mills to storage. Fuller Rotary Duplex Single-stage Compressor, which furnishes air for conveying, shown in background.



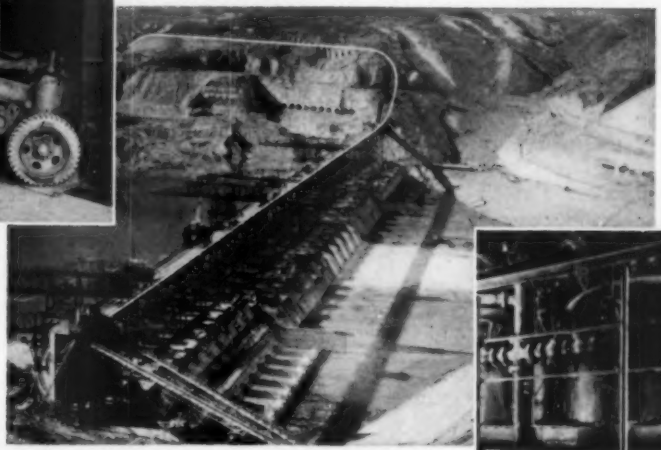
Fuller Airlift conveying finished Portland cement from a Fuller Cement Cooler to a Fuller-Kinyon Pump. This Airlift was installed to go up and over the electrical starting switches shown at right, due to the fact that no conveyor could economically be placed underneath, because of conduits installed in the concrete foundation and floor.

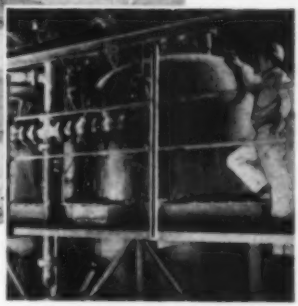
Fuller

EQUIPMENT FOR BETTER OPERATION

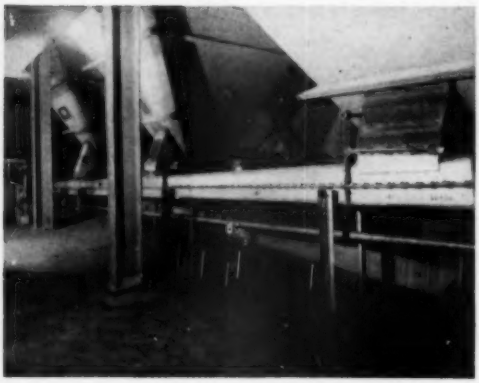
Fuller-Kinyon, Fuller-Fluxo, Airveyor, F-H Airslide Conveying Systems . . . Rotary Feeders and Valves . . . Rotary Compressors and Vacuum Pumps . . . Inclined-Grate Cooler . . . Pulverized Material Cooler . . . Material-Level Indicator . . . Aeration Units . . . Airlift . . . Constant-Head Feeder . . . Slurry Valves . . . Motion Safety Switch . . . Samplers

Pulverized Materials with Air





Fuller-Fluxo Conveying System at Grand Coulee Dam. White line shows approximate location of conveying line from storage bins to mixing plant, lower left of photo. Right: Fuller-Fluxo Pump used at Grand Coulee. Upper left: Fuller Remote-Control Unloader unloading cement from box cars and conveying to storage bins.



Fuller-Huron Airslide conveying Cottrell precipitater dust in a cement plant. The Airslide replaces the screw conveyor, shown below and back of the Airslide.

Fourteen-inch Airslides conveying finished raw material from nine separators, total capacity 225 tons an hour. This photo illustrates the adaptability, flexibility, and simplicity of an Airslide installation. Note simple supports, and the ability to make a change in direction.

G-57T

FULLER COMPANY

CATASAUQUA — PENNSYLVANIA

CHICAGO 3
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World-wide...

ENGINEERING and DESIGNING Service for Cement and Rock Producers *by*

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Modern Methods

SERVING INDUSTRY since 1895

Specializing in service to the nonmetallic-minerals industry, MACDONALD provides *unit responsibility* in plant engineering, design and construction.

Our experience—based upon many successful world-wide projects in Mexico, China, Europe and the United States for 54 years—can provide effective and economic solutions to installation and production problems.

The new cement pricing system poses many difficulties, including new plant locations, shifting territories and markets, bulk silo storage, and changes in sales and manufacturing policies.

MACDONALD Service is especially valuable in assisting producers to meet these requirements with maximum efficiency.

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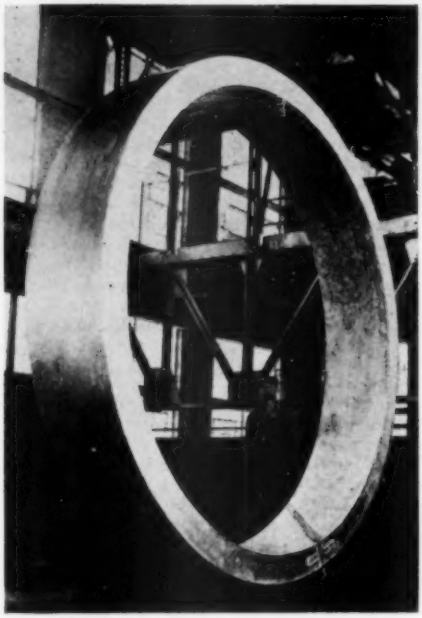
IT COSTS *LESS* TO OWN THE BEST



Rotary Kiln Riding Ring Forged, rolled, welded, machined to exact size

KILNS AND ACCESSORIES

Cast or forged from metals specially selected to suit the work required

•

Subjected to chemical and physical tests

•

Properly designed by KVS engineers

•

Correctly made by master mechanics

•

Produced in our own shops according to our own rigid specifications

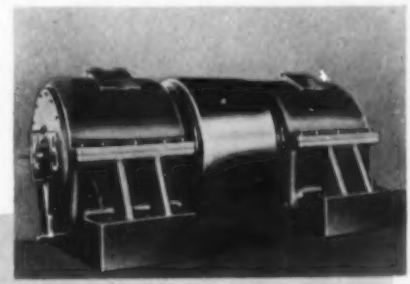
•

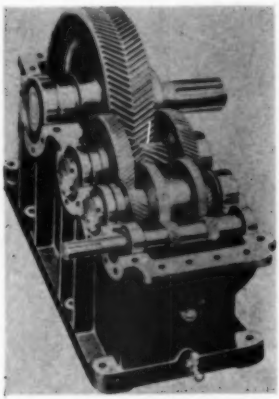
Highest quality . . . Finest workmanship

•

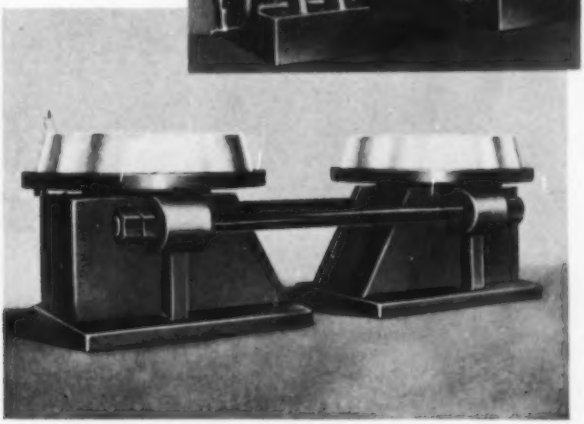
Send for literature describing, fully, KVS Kiln equipment and parts. Learn why "It Costs Less To Own The Best"

Right . . . Riding Ring Supporting Rollers made of open hearth cast steel. Operates in water & oil bath





Rotary Kiln Main Gear Drive operates in "Tailormade" gear housing. Main gear, spur teeth made in halves



Rotary Kiln Thrust Rollers mounted in oversize, bronze-lined, self lubricating thrust bearings

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

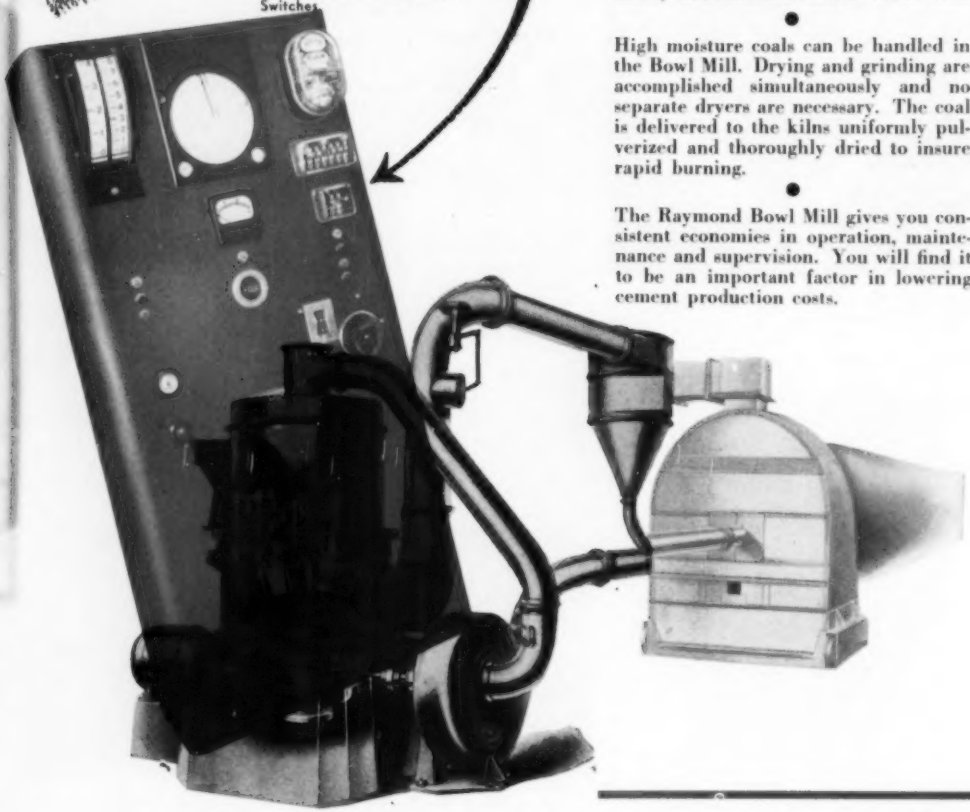
TWO PARK AVENUE, NEW YORK 16, N. Y.

Modernize ~~YOUR KILN FIRING AND~~

VISUAL CONTROL

Complete Operating Picture of Raymond

BOWL MILL All controls centralized on panel board including Temperature, Feed Rate, Static Pressure, Coal Air Mixture, Amperage and Operating Switches.



You can make your kiln firing operations efficient, uniform and automatic by the use of the Raymond Bowl Mill. Well over a thousand installations have demonstrated the superiority of this modern direct firing unit.

●

The Bowl Mill maintains the proper coal-air ratio and volume for maximum combustion efficiency at all loads. The central control system enables one operator to supervise several mills as easily as a single unit. Your kiln requirements are fully met by the flexibility of the Bowl Mill, and the operation is readily adjusted to variations in size, grindability and moisture content of the coal.

●

High moisture coals can be handled in the Bowl Mill. Drying and grinding are accomplished simultaneously and no separate dryers are necessary. The coal is delivered to the kilns uniformly pulverized and thoroughly dried to insure rapid burning.

●

The Raymond Bowl Mill gives you consistent economies in operation, maintenance and supervision. You will find it to be an important factor in lowering cement production costs.

RAYMOND BOWL MILLS are built in several sizes to meet the capacity requirements of small or large rotary kilns.

BOWL MILL

Raymond engineers will be glad to advise you on special grinding or separating problems.

CEMENT CLASSIFYING OPERATIONS

WHIZZER SEPARATION

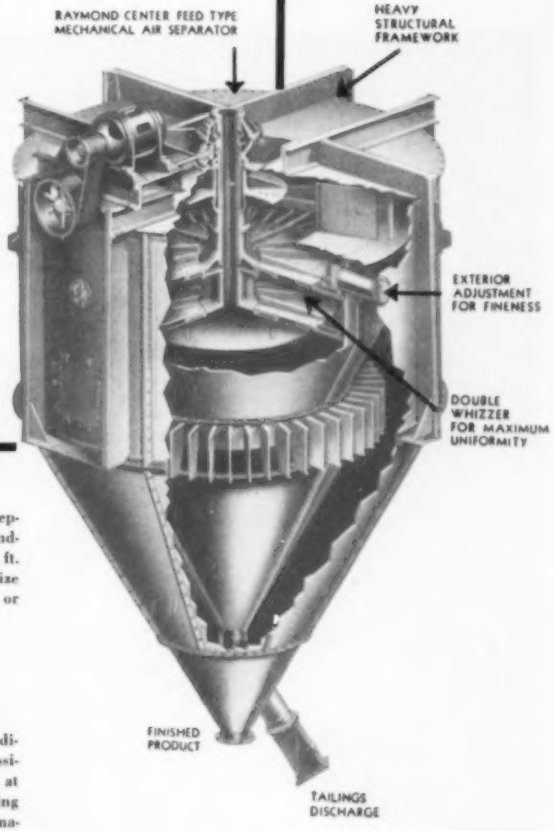
The Raymond Mechanical Air Separator with *double whizzer* is the modern type unit for cement classification, and it will very definitely increase output when used in closed circuit operations in combination with your grinding mills.

•

The whizzer principle of separation insures uniformity of the finished product and clean tailings. With the mill adjusted for the range of fineness desired, you can control the specific surface area of the cement, so as to produce the standard grades or the high early strength cements.

•

The Raymond Separator, with either the single or double whizzer, is highly efficient in classifying many other materials . . . limestone, gypsum, chemicals, and many special materials and manufactured products.



Range of Sizes

Raymond Mechanical Air Separators are built in eight standard sizes from 4 ft. to 18 ft. in diameter, also in the 30" size shown for small capacities or laboratory use.

Laboratory Air Separator

This is a 10-inch diameter unit for classifying a few pounds at a time, as in running tests on powdered materials.

COMBUSTION ENGINEERING—SUPERHEATER, INC.
RAYMOND PULVERIZER DIVISION
1321 North Branch Street **Chicago 22, Illinois**
District Offices: Room No. 612—200 Madison Ave., New York 16
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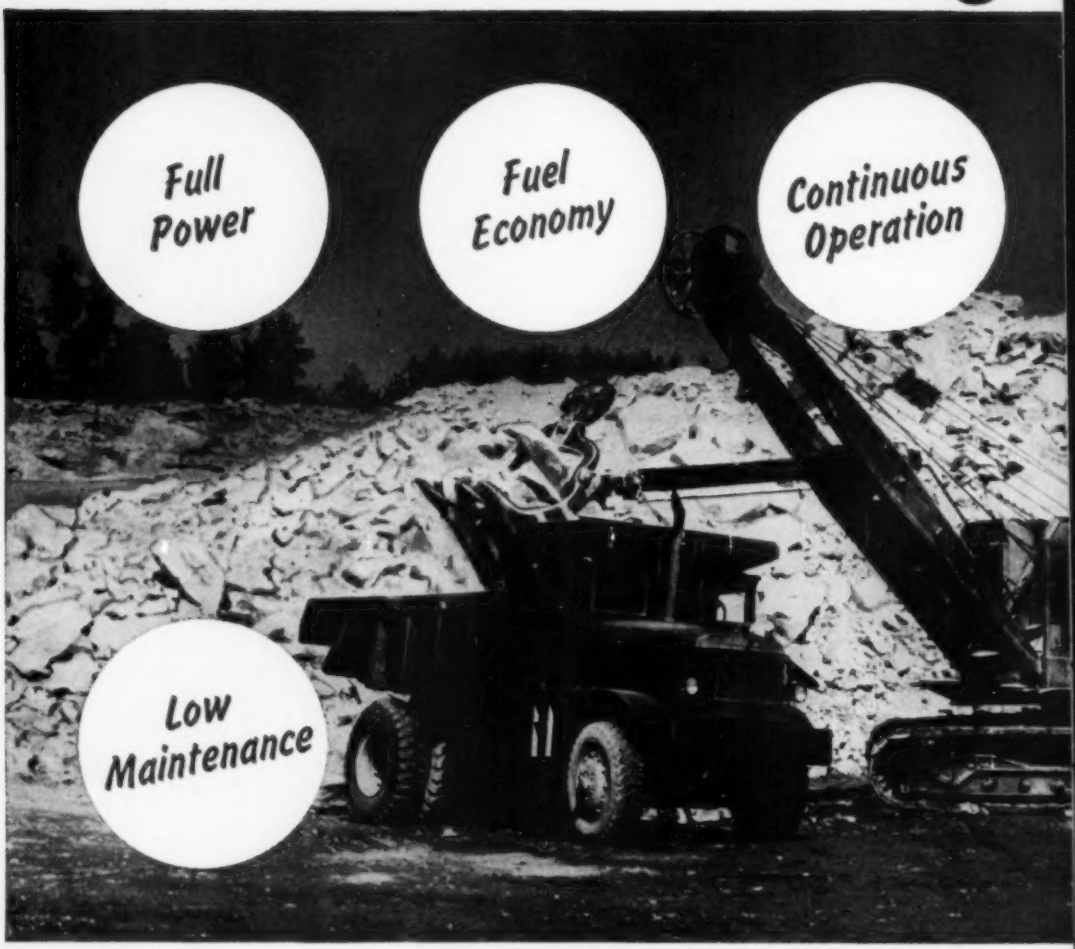
SINCE 1887

SINCLAIR TENOL of Maintaining



SINCLAIR

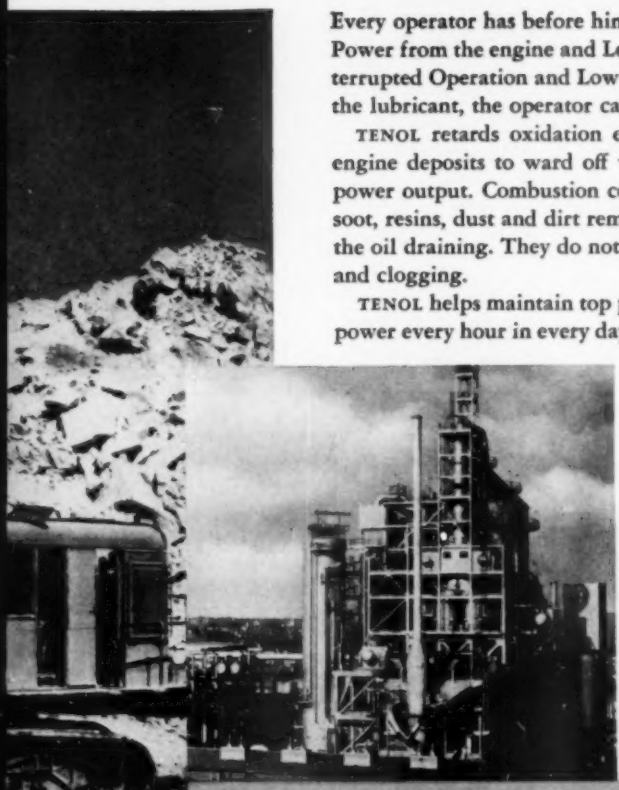
YOUR NEAREST SUPPLIER OF SINCLAIR PRODUCTS WILL GLADLY ARRANGE

Solves the Problems Full-Time Operation

Every operator has before him four big objectives. He requires Full Power from the engine and Low Fuel Consumption. He wants Uninterrupted Operation and Low Maintenance. When Sinclair TENOL is the lubricant, the operator can accomplish all these aims.

TENOL retards oxidation effects and reduces gum, varnish, and engine deposits to ward off valve sticking and thus promotes full power output. Combustion compounds, unburned fuel, carbon and soot, resins, dust and dirt remain suspended and are carried away in the oil draining. They do not accumulate as sludge to cause sticking and clogging.

TENOL helps maintain top production continuously . . . giving full power every hour in every day.



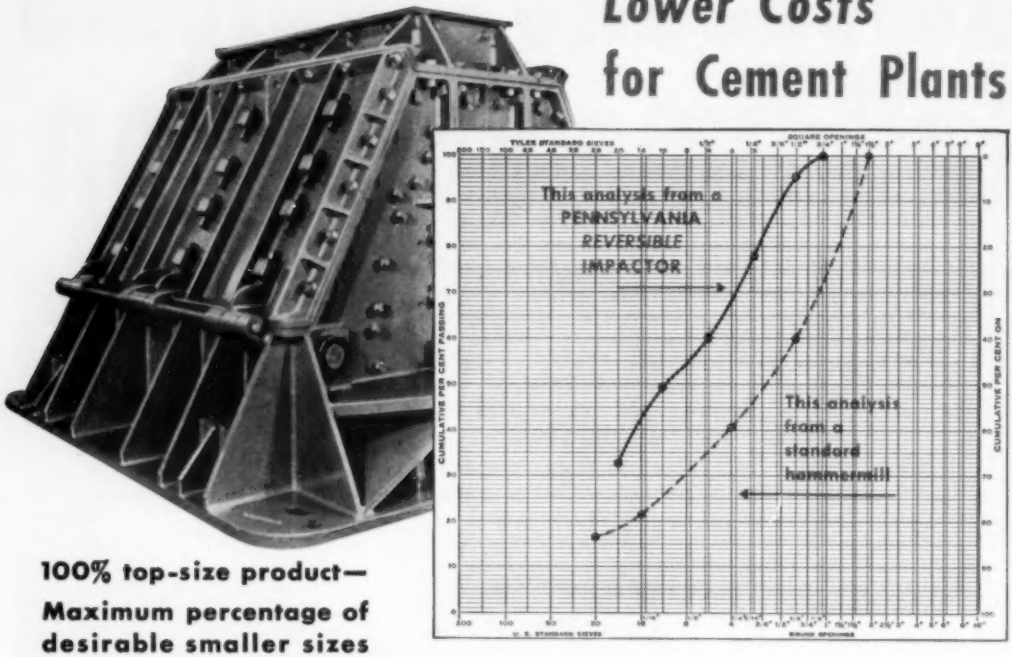
New Fluid Catalytic Cracking Stills (like the one shown here) are helping to expand Sinclair's refinery output. Sinclair's great refineries are now turning out products at the rate of 150,000,000 gallons of lubricating oil yearly.

About 40% of all the Aircraft Engine Oil used by domestic Airlines in the U.S.A. is supplied by SINCLAIR. The same careful research that developed this high quality oil for the Airlines is put into TENOL and other Sinclair Oils.

HEAVY DUTY LUBRICANTS

FOR LUBRICATION COUNSEL, OR YOU MAY WRITE TO SINCLAIR REFINING COMPANY, 630 FIFTH AVE., NEW YORK 20, N. Y.

Here's PROOF of a *Better Product Lower Costs* for Cement Plants


This analysis from a PENNSYLVANIA REVERSIBLE IMPACTOR
This analysis from a standard hammermill
CUMULATIVE PER CENT PASSING
CUMULATIVE PER CENT ON

100% top-size product—

Maximum percentage of desirable smaller sizes

Even a small percentage of oversize increases maintenance costs and lowers capacities of grinding mills. The PENNSYLVANIA REVERSIBLE IMPACTOR reduces rock to controlled size. Controlled because the IMPACTOR is "closed circuited." Only desired, top-size particles get through; oversized particles return for further reduction. The delivered particles are predominantly granular because the IMPACTOR does not "crush" its feed but "shatters" it in high-velocity ricochet between rotating strikers, or hammers, and fixed anvils. This *impact-rebound-impact* causes an *explosive* rupture of the rock, producing the granular particles ideal for grinding mills. And the IMPACTOR is reversible: merely by pushing a button you reverse the rotation of the hammers, thus utilizing their back faces and a second set of anvils.

Reversibility means two lives for parts subject to the greatest punishment. "Impact" reduction means elimination of intense friction found in direct crushing methods. Controlled-size, granular product means less work, less depreciation for your grinding mills. In comparison with a standard hammermill, records show the PENNSYLVANIA REVERSIBLE IMPACTOR will save you approximately 50% on parts maintenance, 75% on labor maintenance.

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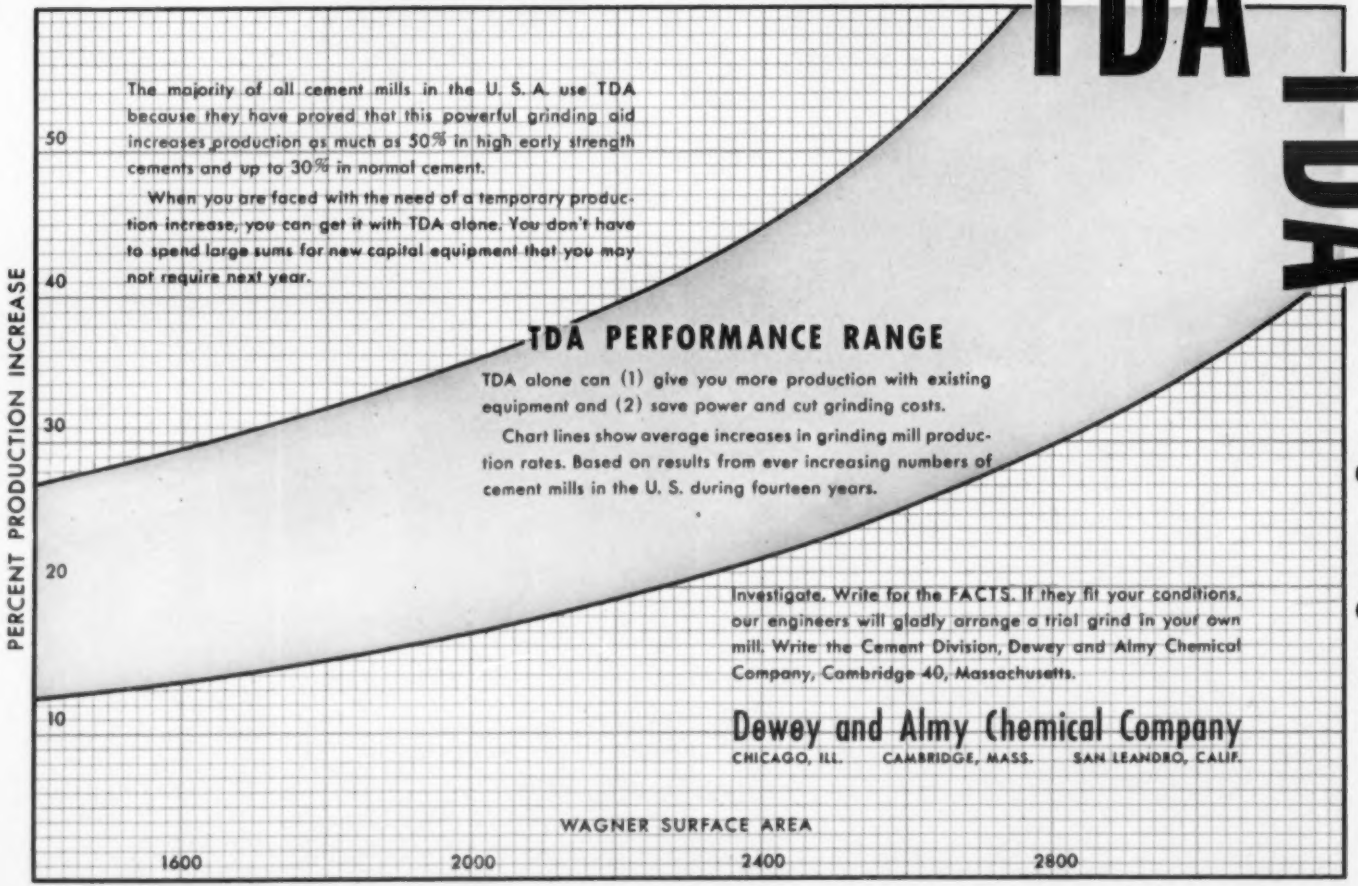
TDA

for improved cement mill production

TDA

TDA

saves grinding costs



The majority of all cement mills in the U. S. A. use TDA because they have proved that this powerful grinding aid increases production as much as 50% in high early strength cements and up to 30% in normal cement.

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TDA PERFORMANCE RANGE

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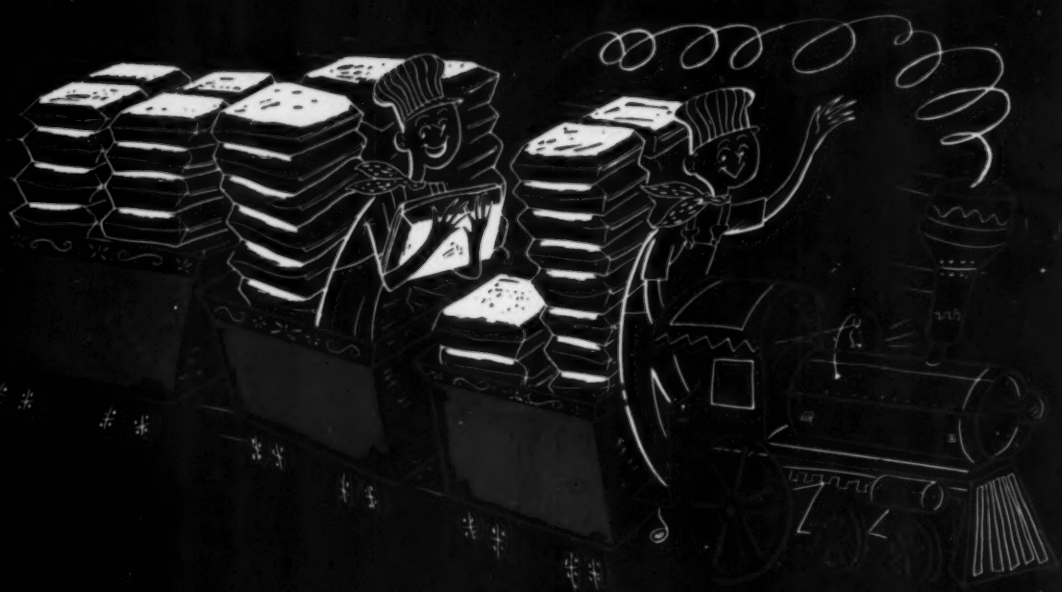
RDA — a low cost grinding aid for dry raw materials. Gives 20 to 50% increased grinding production at identical fineness. Other benefits such as uniform and smaller sized clinker and increased kiln output have been noted.

Darex C M — a grinding aid and plasticizer. Gives high quality masonry cement at low cost. Air entraining agent.



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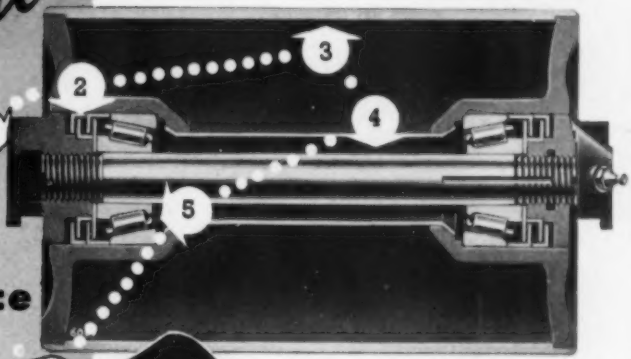

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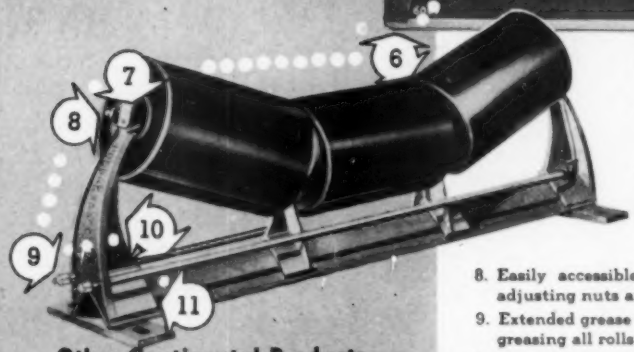

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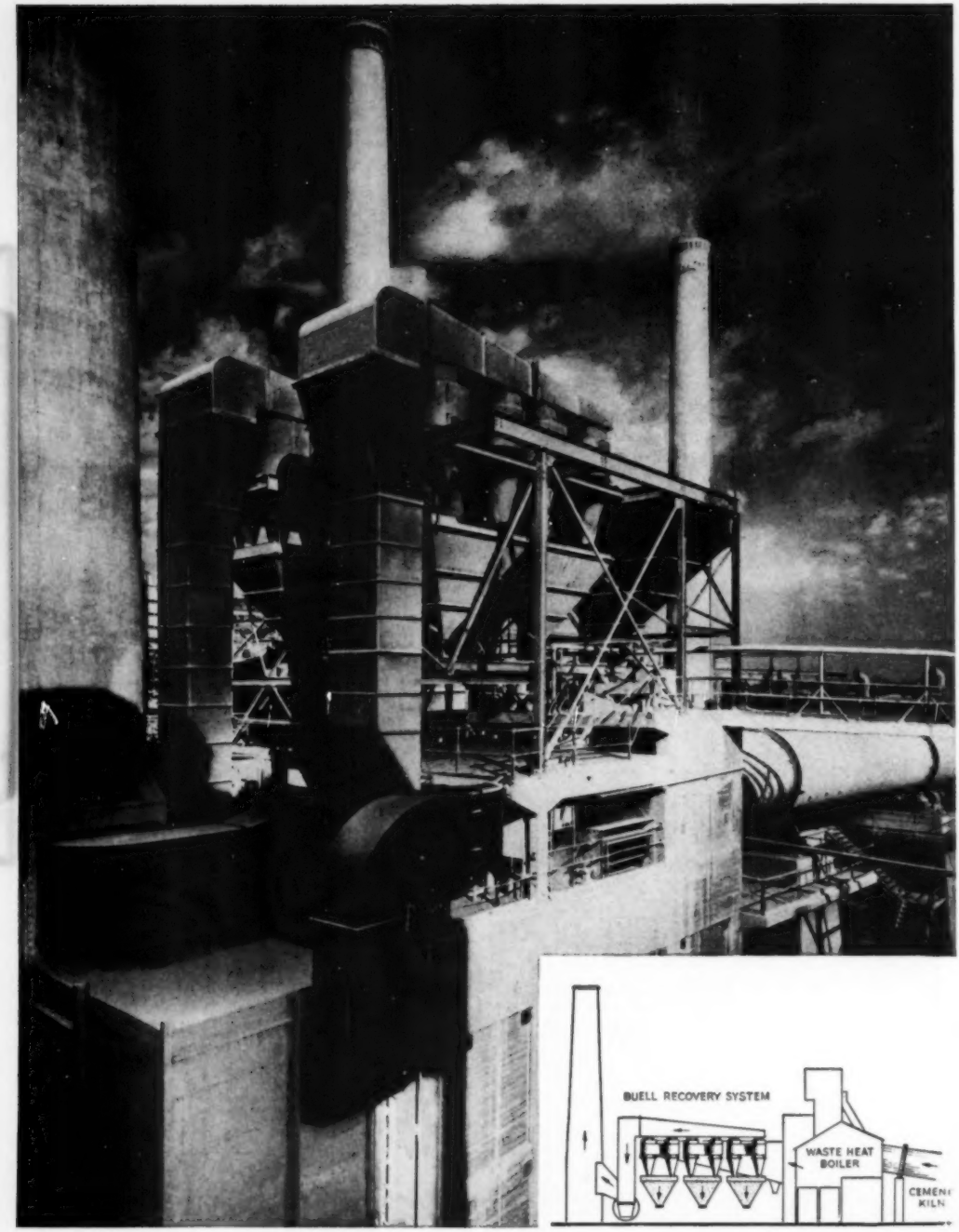

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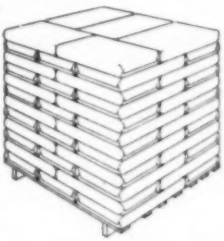

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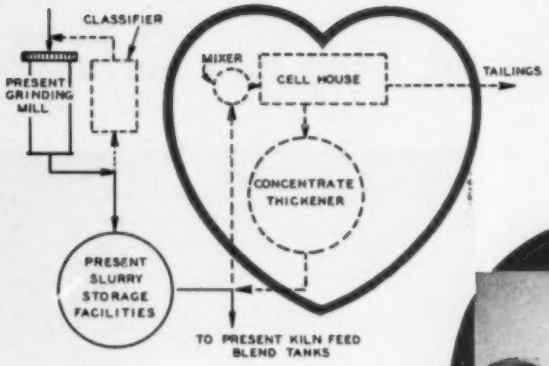

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The flotation rejects are often marketed as a by-product

In many instances, the saving in quarry operation alone, more than offsets the operating cost of flotation.

S-7

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Report on Current Labor Developments

More Subjects of Collective Bargaining

IN RECENT years, the subjects about which employers are required to bargain have been increasing very rapidly. In earlier years, collective bargaining was pret-

By S. HERBERT UNTERBERGER
Director of Research
Labor Relations Information Bureau
Washington, D. C.

ty much limited to hours of work and the wage rates to be paid. As unions became more powerful, they were able to bring more and more subjects into the area of collective bargaining. Thus, bargaining about vacations, paid holidays, night shift bonuses and similar matters became a commonplace.

Employers, generally, did not put up any very strenuous fight against this enlargement of the sphere of collective bargaining. Especially during the war years, when they were prevented from giving wage increases to hold on to their employees because of the government wage controls, they were more than glad to have the opportunity to agree with their unions for increased employment benefits.

The most significant recent balk at expanding the area of collective bargaining occurred with respect to pension plans. Here the Inland Steel Co. spearheaded the drive for the steel industry by refusing to bargain with the union about changes in the pension plan. As was reported on this page in a previous issue, the company lost this case both before the NLRB and before the courts. The net effect of its effort was to establish once and for all that pensions were properly within the area of collective bargaining. Any company refusing to bargain about this subject is violating the law of the United States and subject to its penalties.

Relying heavily on the precedent established in the Inland Steel case, the NLRB recently ruled that an employer must bargain with respect to a group health and accident insurance program. The trend is clear. Unions are now in a position where they can ask for any of the employment benefits—life insurance, accident and sickness benefits, medical expense insurance, retirement pay, death benefits, etc.—and the employer must bargain about whether they should be installed or not. Furthermore, if any such arrangements have been installed previously by the employer, the union may request changes and modifications which the employer is required to consider.

The area of collective bargaining has been broadened recently on another front as well. An NLRB Trial Examiner has recently ruled that, where a considerable number of employees were dependent on the employer for living facilities, the employer was required to bargain over the price he was charging them for meals. This decision raises many questions wherever the employee buys things from the employer. For example, in a company town, the rent charged for company houses would probably be subject to collective bargaining. Where an employee is charged for his uniform, or where he is charged for its laundering, these charges would become legitimate subjects of bargaining.

Review of Collective Bargaining Subjects

Since the so-called "frontiers" of collective bargaining are being advanced so rapidly, it may pay to go back and review some of the most significant decisions about what must be bargained. There is no question that wages and conditions of employment are a required subject of collecting bargaining. Furthermore, the interpretation of a collective bargaining contract is a proper subject of negotiations between a labor organization and an employer. In general, there would be little question that grievances are a proper subject of collective bargaining. When we advance beyond these subjects there is often a great difference of opinion.

When the NLRB was asked to rule whether the employer had to bargain about individual merit increases, its answer was that the employer was required to so bargain. This meant that the employer's judgment alone did not rule absolutely on the question of which employees were most meritorious and deserved monetary recognition of their merit. While bargaining about the subject does not mean that the employer has to change his mind, it does mean that he has to listen to and consider arguments about the relative merits of various employees and to defend his action with logical argument of his own.

The NLRB similarly ruled that the installation of an incentive plan is a proper subject of collective bargaining and where the union requests negotiation of such a plan, the employer's unilateral establishment of one which would affect the basic wage rates of the employees set by an existing collective agreement would constitute a violation of the employer's duty to bargain. While there is no parallel case on the subject, it is likely that the installation of a job evaluation plan would be subject to the same rule.

Other matters which have been ruled as properly subject to collective bargaining are such matters as the working schedules. Also there is a case on record where the employer was found guilty of refusal to bargain when he refused to discuss matters concerning the number of employees to be hired. Similarly, employers were required to bargain about the reemployment of former employees at a new location.

Of special importance is the case where an employer was required to bargain about the amount and kind of work which he was contracting out. This was done on the ground that the employer's system of subcontracting work might vitally affect his employees by progressively undermining their tenure of employment in withdrawing more and more work and, hence, more and more jobs, from the plant.

One final observation about this whole question of the subject of collective bargaining—the employer is only required to bargain about these subjects if the union requests such bargaining. The employer does not have to go out of his way to discuss these questions unless the union raises the question first.

Unilateral Wage Increase Illegal

An employer may not grant his employees a wage increase greater than he has offered the union in collective bargaining; the Supreme Court ruled that way in a recent decision. In this case collective bargaining broke down when he offered an increase of 1 to 1½ cents per hour. Twelve days later the employer, without consulting the union, granted an increase of from 2 to 6 cents per hour. The Supreme Court ruled that this was an unfair labor practice.

John L. Lewis Guilty Again

In July 1948 the United Mine Workers of America struck against the captive coal mines, those owned

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The application above shows Amsco No. 459 applied to the front and teeth of a manganese steel walking dragline bucket, used for stripping overburden from iron ore at a Minnesota mine. In similar applications where more severe impact coupled with abrasion is encountered, Amsco Economy Hardface is recommended.

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by the steel companies. The strike was not settled until the coal mines agreed to a union shop clause in the contract. At that time, it was well known that the clause was illegal under the Taft-Hartley Act because the officers of the union had not signed non-Communist affidavits and therefore the NLRB would not hold any election to authorize a union shop.

Now almost a year later, the NLRB has ruled, unanimously, that the union shop clause is invalid. It has ordered the union and its president, John L. Lewis, to stop giving effect to the union shop clause, to stop causing companies to sign illegal union security contracts and to stop instigating strikes for that purpose.

This, however, is not the end of the case. Lewis will no doubt appeal. His obvious hope is that he can drag the case out until the union shop provision of the Taft-Hartley Law is repealed after which the case will be dropped because it is no longer significant.

Kyanite Exploitation

(*From page* 82)

lining blocks and granite cubes are used as a grinding medium. The mill operates in closed circuit with an 8-ft. Gayco air separator which is charged by a bucket elevator from the pebble mill. Oversize from the air separator goes back to the mill, while the undersize drops into a 6-ft. steel cone bagging bin.

Calcining is done in a 4- by 60-ft. rotary kiln lined for its full length with brick. The kiln is set at a slope of ½-in. per ft. and turns at approximately 2 r.p.m. It is equipped with a steel dust chamber and a 30-in. by 60-ft. stack. A screw conveyor operating through the dust chamber removes the accumulated dust, which is later returned to the 200-ton storage bin. Discharge temperature is maintained at 2800 deg. F.

The calcined material flows through a water-jacketed steel chute into a 3- by 40-ft. rotary cooler. Cooling water is sprayed on the outside of the cooler for about half its length. Material which is to be bagged is drawn directly from the cooler and elevated into a 6-ft. bagging bin. When the material is to be ground to a finer grain size the calcined material is conveyed into a surge bin charging the pebble mill. Power for the plant is purchased from the Duke Power Company. A 12,000-volt line was run to the company's substation, which consists of three 100 kv.-a. Westinghouse transformers. With the exception of the main water pump, 440 volts is used throughout the whole plant. Water for the operation of the plant is pumped by means of a 4-in. Frederick 3-stage centrifugal pump for approximately 6000 ft. through 10-in. Naylor spiral-welded pipe. Pressure at the pump is 175 lbs. Current for the pump motor is stepped up to 2200 volts.

All material must be trucked to Clover, where it is loaded on a Southern Railroad line. To date Commercialores products are shipped as far east as the Atlantic Coast and as far west as Missouri. Top officials of the company, all of whom are well known in the nonmetallic mineral industries include A. R. Eckel, president and treasurer N. K. Karchmer, vice-president in charge of production, who designed and built the plant; and Henry S. Doty, vice-president in charge of sales, who maintains offices in New York City. S. J. Beers is plant superintendent.

Coal Still Leading Fuel In Cement Production

In 1946 bituminous coal represented 68 percent of all the fuel used for manufacturing cement, whereas in 1927 its proportion was 82 percent. Meanwhile the role of natural gas increased from 8 percent to 22 percent. The proportion of fuel oil has varied, yet is usually less than 10 percent. The fuels competition for making cement is mainly between coal and natural gas, and cement plant contracts are valued by bituminous producers because the high summertime output of cement coincides with the summer-time dip in the overall demand for coal. In 1946 16.1 barrels of cement were produced per ton of coal, as compared with 14.7 in 1927.

Mississippi Freight Rates Cut on Sand and Gravel

The Mississippi public service commission has approved a revised schedule of freight rates on sand and gravel, granting an average five percent reduction under present charges.

The lowered schedule was accepted by the commission on the recommendation of rail carriers, who earlier had prepared the new scale on the basis of an agreement with sand and gravel shippers.

Lone Star Cement Corp. To Move New York Office

The Lone Star Cement Corporation has leased the entire fifteenth floor, 21,400 square feet of floorspace, in the office building under construction at 100 Park Avenue, New York, N. Y.

The cement firm has occupied its present headquarters in the Canadian Pacific Building at 342 Madison Avenue since erection of the structure in 1921. The new office building is scheduled to be completed on February 1, 1950.

Over a Million Tons of Earth Moved to Get Phosphate Ore

BECAUSE phosphorus is the most readily depleted element of the big three in crop production —nitrogen, phosphorus, and potash —and because agricultural authorities point out that poor yields are more often due to a shortage of phosphorus than any other soil element, the natural phosphate reserves in southeastern Idaho are taking on added importance in overwhelming postwar crop demands.

These deposits, first blocked out through federal surveys, were known to exist from the Fort Hall Indian reservation, twelve miles north of Pocatello, Idaho, nearly to Yellowstone Park and east and south into Wyoming. It remained, however, for three private concerns to prove more accurately the quality and location of the deposits. These firms, the Anaconda Copper Mining Company, whose mine is located north of Soda Springs, Idaho, at Conda, the San Francisco Chemical Company, mining north of Montpelier, Idaho, and the Simplot Fertilizer Company, engaged in a huge open pit operation on the Fort Hall reservation, can be credited with proving and opening up the vast reserves. The Idaho deposits are estimated at eight billion tons of phosphate ores, approximately 60 percent of the nation's supply.

The phosphate ores are formed from the bones of prehistoric animals deposited millions of years ago. They lie generally in a bed or strata covered with cap rock and other overburden, to a depth of as much as 100 ft. In the Simplot operations, where over 11,000 feet of diamond drillings have established large high grade reserves, the brownish phosphate ore runs 31 percent or more phosphoric acid (P_2O_5). Phosphatic shales lying above the richer ore average 25 percent P_2O_5 and are stockpiled for future reduction into elemental phosphorus. This phosphoric acid, unavailable to growing plants in its natural state, is changed through acidulation to an "available" compound and as such has wide agricultural use.

• A large portion of this immense stripping job is done with big dozers, the largest tractor weighing 40,000 lbs.

• To recover 625,000 tons of ore, more than 100,000,000 tons of overburden had to be moved.

While both the Anaconda and San Francisco Chemical mines have been in operation longer, the Simplot operations were the first to both mine and process the ore within Idaho. Located on sage brush land leased from the Indians of the Fort Hall reservation on a royalty basis, the Simplot open pit mine has produced 625,000 tons of high-grade ores in the past three years and with present equipment has a capacity of 5000 tons. The overburden and ore are handled with diesel crawler tractors and dozers, the largest being Allis-Chalmers HD-19's weighing 40,000 pounds, and with power shovels of 2¾ yd. capacity and 20- and 30-ton Euclid pit trucks.

Pending the completion of a railroad spur, the ore is trucked 18 miles over a hard-surfaced, all-weather, company-built road to Fort Hall where it is trans-shipped by rail to the Pocatello acidulating plant or loaded for west coast ports for government export. The mining of the 625,000 tons of ore to date has necessitated the removal of over one million tons of overburden and cap rock. The mine maintains its own workman's village and shops on the site.

After complete pulverization of the ore at the processing plant, it is mixed with sulphuric acid and cured, producing superphosphate with a guaranteed P_2O_5 availability of 18 percent. This is bagged at the plant and shipped to nearly every state west of the Mississippi River.

At the plant location four miles west of Pocatello, work has already

CHOOSE
"QUICK-WAYS"
REG. U. S. PAT. OFF.
FOR SURE PROFITS

In all power shovel applications, capacity and utility are essentials. A truck shovel must have high speed mobility, be immediately convertible, and have adequate capacity to be economical on every job. A "QUICK-WAY" has all these fundamentals plus a long list of others.

"QUICK-WAYS" are designed for full truck speed, on or off the highway. Mounted on any standard truck, the working parts provide perfect operating balance for the truck shovel. All-steel construction gives built-in strength and lightness for maximum capacity and stability.

You get more utility out of a "QUICK-WAY" fully equipped, than any comparable equipment. Each "QUICK-WAY" is easily converted in minutes from Shovel to Crane, Dragline, Clamshell, Pile Drive, Scoop, Trench Hoe, Backfiller, etc. Buy only the attachments you want; your "QUICK-WAY" does more jobs better.

Parts are rugged and simple, requiring a minimum of servicing and having proved ability to take a life long beating. Many interchangeable parts and easy accessibility simplify maintenance and repair. From engine to attachment, every "QUICK-WAY" part will deliver its capacity rating and more.

The essentials built into every "QUICK-WAY" mean sure profits on a small investment; economical to buy, economical to use, it's one of the most useful machines you can own. There's a "QUICK-WAY" owner near you; ask HIM.

MODEL E: 4/10 cu. yd. capacity, mounts on any standard 5-ton truck.
MODEL J: 1/4 cu. yd. capacity, mounts on any standard 1½-ton truck.

"QUICK-WAY"
TRUCK SHOVEL COMPANY
DENVER, COLORADO
Worldwide Distributor Sales and Service
PIONEER IN POWER SHOVELS FOR TRUCK MOUNTING AND STILL THE LEADER

been started by the Simplot company and the Westvaco Chlorine Products Company on the construction of a $4,000,000 electric furnace project for the reduction of the presently stock-piled shales into elemental phosphorus. Additions almost doubling the acidulation plant's curing and shipping facilities are under construction.

Canadian Cement Production Sets All-Time High in '48

Production of cement in Canada durin 1948 exceeded all previous annual records, both in quantity and total value of products. During the year a total of 14,127,123 barrels, valued at $28,264,-987, were sold or used by the producers, an increase of 18.3 percent in quantity and 31.9 percent in value over the 1947 shipments of 11,936,245 barrels, worth $21,968,909. Shipments by provinces were: Quebec, 6,517,031 barrels; Ontario, 3,660,756 barrels; Manitoba, 1,697,042 barrels; Alberta, 1,224,313 barrels and British Columbia, 1,027,981 barrels.

The same 8 plants were in operation during 1948 as in the previous year. The Canada Cement Company, Limited, had works at Hull and Montreal East in Quebec, at Port Colborne and Belleville in Ontario, at Fort Whyte in Manitoba, and at Exshaw in Alberta; the St. Mary's Cement Co., Limited, operated a mill at St. Mary's, Ontario, and the British Columbia Cement Co., Limited, had a plant at Bamberton, British Columbia. The plant at Exshaw, Alberta, was expanded to double its previous capacity. Alterations to permit increased production at Belleville, Ontario, are expected to be completed this year. The industry has 20 kilns with a total rated capacity of 41,000 tons per 24 hours.

Raw materials used in 1948 included 3,449,947 tons of limestone, 119,821 tons of gypsum, 277,178 tons of clay, 9,182 tons of iron oxide, 47,749 tons of silica sand and 78,377 tons of shale.

The cement industry employed an average of 1,723 persons and paid $4,-356,086 in wages and salaries. Raw materials, process supplies and containers cost $5,699,042, and fuel and electricity $7,158,156. The gross value of shipments f.o.b. works was $30,561,717.

Imports of portland cement into Canada amounted to 1,120,671 barrels, valued at $3,995,173 in 1948, a decrease of 10.2 percent in quantity from the 1,248,-625 barrels in the previous year. Exports amounted to 72,999 barrels, valued at $200,575. The apparent consumption of cement in Canada was 15,174,795 barrels in 1948.

Calcar Quarries, one of the major sources of crushed stone and agricultural lime in Orange county, Ind., has been purchased by Glenn Meadows of Paoli, Ind. Quarry superintendent is L. N. Schenk of Scottsburg, who has had 40 years' experience as quarry operator.

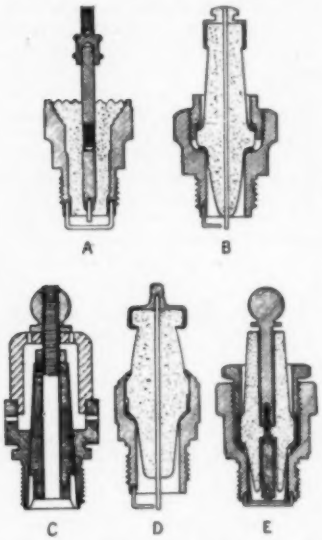
Spark Plugs For Internal Combustion Engines Part I

This article, reprinted by special permission from the June issue of the magazine, "Lubrication", published by The Texas Company, gives interesting facts and practical information on one of the smallest but one of the most important and widely-used items of equipment in this field. Succeeding installments will be published in early issues.—The Editor.

THE spark plug, although a relatively small part of a spark-ignition internal combustion engine is far from being an insignificant item. For its size it may well be the most important component because the overall well-being of the engine is critically dependent upon the plug's satisfactory performance. Plug performance today is so superior to that of a few years ago that many users give little thought to that piece of equipment. The spark plug industry expects to manufacture an estimated 300 million plugs this year and one manufacturer, alone, will make over 100 different types.

HISTORY

The first "commercially successful" spark-plug ignition internal combustion engine was invented by M. Lenoir in 1860. The spark plug used in this engine had electrodes spaced one-half inch apart, the spark timing was erratic and the engine did well to overcome its own friction. While by 1900 replaceable spark plugs, as we know them today, were commonplace, their design and construction left much to be desired. Also, because piston ring design was still in its infancy, engine compression was poor and considerable oil pumping was encountered. Both factors resulted in carbon fouling and oil wetting of spark plug electrodes and as a consequence many design variations were introduced during the early part of the century to guard against these deficiencies.



Courtesy of National Advisory Committee for Aeronautics

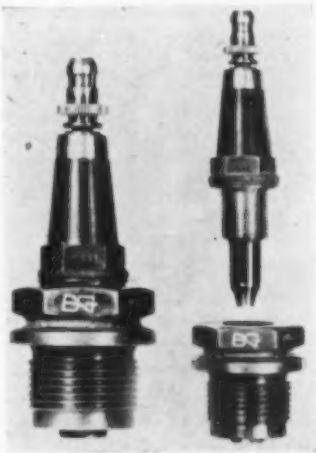
Fig. 1: Types of spark plugs available in 1920.

During World War I, aircraft spark plugs with porcelain and mica insulations were commonplace. In automotive practice during the same period, some steatite insulations—so-called because the mineral steatite (soapstone) was substituted for some of the more common porcelain ingredients—was used. Many other insulation materials and basic designs were put forth, mostly unsuccessful yet interesting. Figure 1 shows several types available in 1920; A was a glass insulator, forced in when molten; B was a screw bushing type which used a metal gasket for a seal—not too different from the modern two-piece construction; C had a tapered mica or steatite insulator, but was impossible to make leak-tight; D had a crimped shell which held the insulator in against a metallic gasket, forerunner of modern one-piece plugs; and E had a spun brass gland around the shoulder of the insulator to improve leak-tightness.

Mica Plugs Mica was much superior to the porcelain available in the 20's. Porcelain and glass were very susceptible to cracking and consequent electrical failure as a result of severe temperature fluctuations characteristics in aircraft engine operation. In milder operations in automobile engines however, porcelain served with fair success. Mica had better insulating properties at elevated temperature and was not so fragile, but had the objectionable characteristic of absorbing oil, moisture and fuel combustion products between the compressed mica washers.

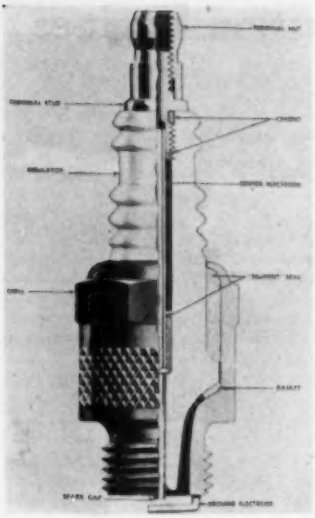
The low thermal conductivity of mica created great difficulty in keeping plugs cool. Engine operations in the late 30's and early 40's required spark plugs that could withstand temperatures in excess of 1000 deg. F. At such temperatures mica decomposes, losing its chemically combined water of crystallization thereby destroying its normal insulating and other desirable physical properties. Higher engine compression pressures were more sensitive to mica's adsorption of moisture, and this frequently made mandatory plug storage in heated drying cabinets. Furthermore, there was the fact that, being essentially silicates in composition, mica readily reacted with and was attacked by lead compounds from fuel combustion forming a relatively low melting-point lead silicate glass. This material, while being a fair insulator at ordinary room temperatures, is a good conductor of electricity when hot. This was a cause of mica plugs misfiring at elevated engine operating temperatures.

Nevertheless, mica served admirably up to the early 1940's at which time, due to the advent of higher powered engines and the use of increased amounts of tetraethyl lead fluid in gasoline, the use of mica in spark plug construction began to decline. Today, mica plugs are used in certain industrial engines and in smaller, air-cooled private plane engines operating on fuels containing little or no lead and where a relatively "hot" plug is recommended, such as shown in Figure 2.



Courtesy of The B. G. Corporation

Fig. 2: Showing the B. G. 2-piece mica plug.



Courtesy of Champion Spark Plug Co.
Fig. 3: Typical 1-piece automotive plug.

Ceramics Due to the shortcomings of mica for good spark plug performance, researchers developed superior ceramics[1] to replace this material. Siemens in Germany introduced sintered aluminum oxide (essentially Al_2O_3, mined in the natural state as crystalline corundum or synthesized as alumina) in the late 1920's and since then, the ceramic insulator has found widespread use. Corundum is frequently modified with small amounts of other oxides to impart certain particular characteristics such as improved electrical insulating properties, high temperature, strength, etc. Besides small quantities of magnesia and silica, often occurring in the binder, commercially available plug ceramics may also contain various mixtures of boria, beryllia, calcia, zirconia and/or thoria.

Alumina has very high mechanical strength, high electrical resistance at high temperatures, resists sudden heat shocks, has excellent heat conductivity of an entirely different order as compared with porcelain, and is resistant to corrosive attacks from lead compounds. Thermal conductivity is an important quality as it largely determines plug operating temperature; insulators with high thermal conductivity may be made with longer firing ends and, accordingly, longer electrical leakage paths. The superior resistance of alumina to attack by lead compounds is due to its chemically basic character.

Plug nose ceramics were once glazed all over with a coating having a high silica content. The firing end was glazed to retard the adherence of carbon; however, this glaze had to be abandoned on current plugs due to its susceptibility to attack by lead oxides. A glaze is retained on the outer end of the insulator to resist accumulations of moisture, dirt, etc., which can provide a conductive path and encourage flash-over. Being glazed, this part of the plug can easily be wiped clean. Figures 3 and 12 typify current, popular automotive type plugs.

PLUG TYPES

The modern spark plug must perform the same basic function as its progenitor but usually under more trying conditions. Now their size, shape and location are very carefully considered. Although spark plugs may be very similar in overall appearance, their performance may be widely different as many built-in design features are not externally visible.

Spark plugs are made in a large variety of types and styles as, in many applications, they have to be fitted to a particular kind of engine operation. Briefly, however, they have certain general classifications which include: thread size, ranging from 10 mm to 7/8 in.; shielded or unshielded, the shield protecting against radio interference; thread reach, or length of thread which depends upon cylinder head thickness (in general, aluminum heads take a longer reach plug than a cast iron head); number and arrangement of ground electrodes; and heat range.

Plugs are made in two basic types of construction: one-piece and two-piece (some three-piece—steel body, center insulator and coupling nut). The two-piece design had, until recently, definite advantages, it could be disassembled to facilitate cleaning "on-the-job," and when carefully reassembled would be leak tight. Better sealing techniques have been developed in the last few years, however, so that the modern one-piece plug can be made gas tight. In certain series of plugs, either one or two-piece construction can be obtained. Although the latter usually is more expensive to purchase, some manufacturers make available replacement parts and overhaul services which enable some operators to realize an overall net savings, despite the higher initial cost. Figure 3 represents a typical one-piece spark plug; Figure 2 is a two-piece design. For any one type of operation—aircraft, stationary gas engine or automotive service, for example—plugs are graded according to their heat range; that is, the optimum operating temperature of the electrodes and core nose.

The difference between a "hot plug" and a "cold plug" is controlled by the structural design; that is, the effective heat path from the center tip to the water jacket (or to the air if it is in an air-cooled engine) is longer for the hot plug than the cold one. This difference is shown in Figure 4 which compares two automotive plugs of widely different heat range. The cross-sectional area and thermal conductivity of the ceramic, and the conductivity and amount of exposure of the center electrode all control the nose temperature so that it is possible to have two plugs of identical outside dimensions and core shape with different heat ratings. The heat range of a plug may be greatly increased by providing an insulator tip. The section of the annular tip is so small that it tends to follow the temperature cycle of the cylinder, and it attains a temperature high enough at lower engine loads and speeds to in-

(*Continued on page* 166)

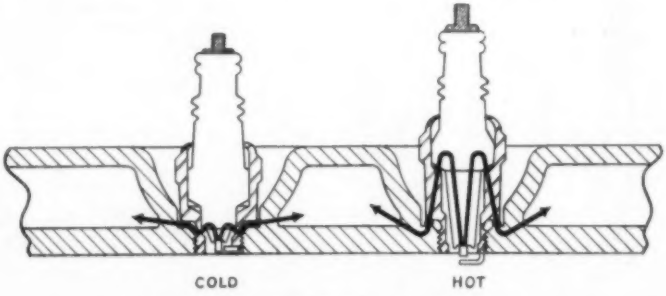


Fig. 4: Heat flow paths in "cold" and "hot" type plugs.

[1]The word "CERAMIC" is derived from the Greek word "KERAMOS" meaning "burned earth", thereby indicating its inorganic character. It is a generic term commonly associated with clays, but embraces a large number of minerals, rocks and mineral products such as clay products, pottery, china ware, glass, vitreous enamels and cements. Porcelain is one of the best known electric insulation ceramics.

Permalite Reduces Weight of Plaster

Permalite, a new lightweight plaster aggregate that will reduce the weight of ordinary gypsum plaster by 58 percent when substituted for sand, has been demonstrated by officials of Great Lakes Carbon Corp. in Newark.

More than 100 architects, structural engineers, plastering contractors and building officials watched a workman apply a plaster made of Permalite and gypsum to two sample walls at a luncheon meeting at the Military Park Hotel.

Other advantages claimed for the product by John W. Moorhead of the company's building products division were: insulating qualities three times that of sanded plaster, high fire resistance, and labor savings resulting from ease of handling.

W. J. Crawford, dealer sales manager, said that Permalite, which is made from perlite, a volcanic rock, would be available on the east coast for the first time when the company's $500,000 plant at Linden, N. J., is completed, probably late in July.

Miller Resumes Operation Of Rebuilt Goldbar Plant

Resumption of business by the Goldbar Lime Company was recently announced by Leslie B. Miller at his plant near Goldbar, Wash., after a period of inactivity which began early in World War II.

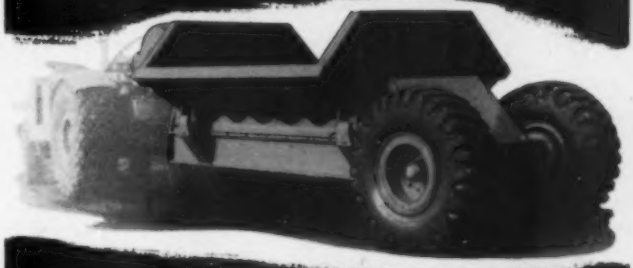
Mr. Miller founded the business as the Consumers Lime Co. about ten years ago, but later changed its name to the Goldbar Lime Co. Now he has rebuilt the plant and has added a well-equipped repair shop and a hydro-electric power plant. The old facilities were dismantled and the foundation was utilized for the new plant, which employs gravity flow of the material throughout the entire processing. A number of long belts and shafts were eliminated and the production line was made more efficient and compact.

A reliance crusher powered by a 45-hp. diesel engine does the primary crushing, and a Lippman hammermill grinds the material to the required fineness. The stone has been found by state tests to have 90 percent calcium carbonate content.

Production of Sulfur in '48 Establishes All Time Record

According to reports tabulated by the Bureau of Mines, production of native sulfur in the United States for 1948 surpassed the previous record by nearly 10 percent. Output totaled 4,869,210 long tons. Imports were negligible and exports, although slightly slower than 1947, were still very large. Apparent sales increased by more than 175,000 long tons and stocks on December 31, 1948, were 146,000 tons lower than at the end of 1947. Sulfur recovered as brimstone, sludge, and paste gained 2 percent, and as hydrogen sulfide from industrial gases, 25 percent.

PD-10Q "ROCK HAULER"



for Heavy Pit and Quarry Duty!

Look at the super-strong body "ribs": the heavy hexagonal-shaped crossmembers, built to absorb frame twist and torque when dumping. The PD-10Q Rubber-Tired Quarry Trailer tells you it's designed for hustling big rock loads, profitably!

The Athey PD-10Q Rubber-Tired Quarry Trailer is a rock-moving specialist of 15 ton — 10 cubic-yard capacity. Note how it teams with the "Caterpillar" DW10 Tractor, to make a fast-moving high-production hauling unit, for mine, quarry and construction. Body dumps hydraulically to either side; rolls on 18.00 x 25 rock-lug low-pressure tires.

The coupon will rush you specifications and other details on the PD-10Q Trailer.

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Gentlemen:
Please rush information on PD-10Q Quarry Trailers.
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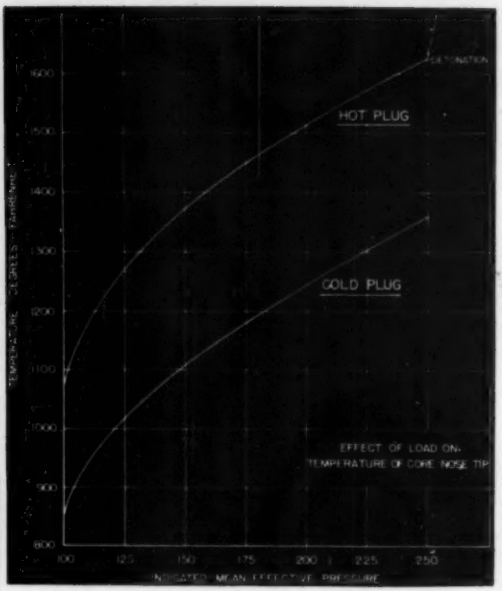

Courtesy of Champion Spark Plug Co.

Fig. 5: Effect of load on temperature of spark plug core nose tip.

Spark Plugs

(*Continued from page* 164)

hibit against deposition of oil and the vapors of lead compounds without causing pre-ignition at high engine output.

PLUG TESTING

The determination of pre-ignition temperature may be accomplished by various means. Perhaps the most interesting is the use, in a test engine, of specially-made thermocouple spark plugs which have a fine thermocouple located in or near the center electrode tip.

The best laboratory means of rating peak plug performance so far developed is in a special, overhead valve, one cylinder gasoline engine[2] having a displacement of 17.6 cubic inches. This is a very rigidly built research engine and is capable of operating under unit loads exceeding those developed by any commercial engine. To rate a plug installed in this engine, the power output is increased by raising the supercharge until a load is reached at which the plug goes into pre-ignition. The maximum engine output without pre-ignition, expressed as Indicated Mean Effective Pressure[3] is the IMEP rating of the plug; the higher the rating, the hotter the plug can operate without pre-ignition.

Figure 5 graphically shows comparative data obtained in a 17.6 engine using specially constructed "hot" and "cold" type plugs with a thermocouple embedded in each insulator tip. Notice for the hot plug that, as the load (IMEP) was increased, the plug temperature also gradually increased up to where pre-ignition occurred. Beyond that point, the temperature would very rapidly increase in a manner which could soon bring about destruction of normal plugs and other engine parts. The "cold plug," when operated over the same load range also increased in temperature; however, even at the maximum load imposed, it remained cool enough to perform satisfactorily at high output. Note that the "cold plug" is also considerably cooler at the light load condition and, if the load were to be decreased further, a condition may occur where that plug is too cold, and cold fouling may occur; this would not take place with the "hot plug" under similar light load conditions.

ELECTRODES

Although platinum is reported to have been used for spark plug electrodes as early as 1895, electrode materials for the past thirty years have almost all been made of nickel or some nickel alloy. The popularity of nickel for many years attests to the judicious selection of this material. The particular alloy varies from one plug manufacturer to the next by incorporating small amounts of other metals (chromium, barium, manganese, columbium, silicon) which enhance certain characteristics of the nickel. These alloying ingredients provide, in an economical design, maximum resistance to deterioration under the electrical discharge, a reduction in the voltage necessary to produce a spark at the gap, and reduce attack in the presence of heat and chemical reactions resulting from the combustion process. Due to the large number of controlling variables in electrode design, data obtained by various investigators frequently are contradictory, and the "best electrode" is a subject of considerable controversy.

In the aircraft spark plug field, two schools of thought exist as to the electrode design and construction; i. e., massive (thick wire) electrodes of the aforementioned nickel alloys vs. fine-wire electrodes of platinum. Contrasting firing ends of these two classifications of spark plugs which are used by the commercial airlines are shown in Figure 6. Note the bi-metallic center electrode of the Champion plug.

Although considerably more costly, the fine-wire platinum type has excellent corrosion resistance and, due to the smaller size, produces a more exposed spark. Furthermore, a lower sparking potential may result, probably enhanced by the sharper edges of the fine-wire design. Fine wires have a lower heat retention and can be heated and cooled more rapidly, tending to follow the thermal fluctuations of the combustion cycle.

British Cement Manufacturers Anticipate Nationalization

The directors of an important group of British cement manufacturers, named Blue Circle, fearing government nationalization, have boosted dividends on stocks issued by the companies in the association. Stock exchange prices have eased, owing to the nationalization threat.

Profits of three big companies last year amounted to 2,676,899 pounds for Associated Portland; 1,552,957 pounds for British Portland, and 512,511 pounds for Alpha Cement.

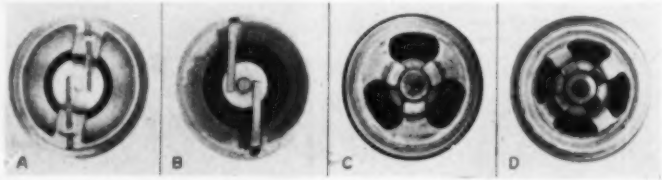

Fig. 6: Electrode arrangements for aviation spark plugs. A and B show fine wires; i.e. B. G. and A. C. types. C and D show massive types; i.e. A. C. and Champion.

[2]Manufactured by Laboratory Equipment Corporation, Mooreville, Indiana.

[3]Indicated mean effective pressure is the average pressure, throughout the engine stroke, required to produce the observed indicated horsepower.

More Information, Please!

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. **Wet Grinder Hardinge Mills.** Bulletin AH-300. 16 pages. Covers conical ball and pebble mills (with installation operating data and flow diagram), conveyhead rod mills, "packaged" wet grinding systems, classifiers, thickeners, feeders, Ruggles-Coles rotary dryers, and the Hardinge "Electric Ear." Hardinge Co., Inc.

2. **B. F. Goodrich Cord Conveyor Belts.** (catalog section 3200) and **B. F. Goodrich Transmission Belting** (catalog section 2100). Both fully illustrated and supplied with specifications. The B. F. Goodrich Co.

3. **Allis-Chalmers Synchronous Motors—Bracket Bearing Type AB.** 2-color, 15-page bulletin containing many illustrations of these motors and their most important parts. Data on range of ratings, temperature rise, and standard torques are given in tabular form. Special sections on stator and rotor construction, brackets and bearings, special features, belt drive motors, vertical motors, exciters, and starting synchronous motors. Two pages are devoted to photographs of actual installations. Allis-Chalmers Mfg. Co.

4. **Data Sheets on Park A. Alloy Hollow Drill Steel, Alva Alloy Hollow Drill Steel and Cruxco Hollow Drill Steel.** Each folder includes a description of the given steel, and tells its recommended uses; information on method of handling; and a temperature chart (in color). Crucible Steel Co. of America.

5. **Profiting Through Earthmoving the "Caterpillar" Way.** 16 pages. Contains illustrations of actual applications and job studies of various "Caterpillar" machines. "Offers . . . an overall view of the company's specialized products." Caterpillar Tractor Co.

6. **Lincoln Weldirectory for Hand Surfacing. Bulletin 466.** Copiously illustrated bulletin. Included are such topics as a preface to arc weld surfacing, a guide for selection of Lincoln electrodes, descriptions and specifications of 13 types of welds, each accompanied by suggested applications. The Lincoln Electric Co.

7. **E-M Synchronizer.** 16-page publication of Electric Machinery Mfg. Co. (No. 27). Contains information on how to select a.c. generators, paralleling a.c. generators, boosting capacity to meet electric power demand, and applying "packaged" generators in industry. Also included is a table for determining current from generator voltage and kv.-a. Electric Machinery Mfg. Co.

8. **Trumbull Electric Magnetic Motor Control.** 22-page bulletin announcing a new line of magnetic motor control. Contains complete product data, including types of disconnects, reversing and non-reversing starters, reversing and non-reversing contactors and combination magnetic starters. Illustrations show the various types and descriptions furnish easily-read factual information. A catalog listing of all equipment supplies specific information needed for ordering. The Trumbull Electric Mfg. Co.

9. **Clark Presents the New and Revolutionary Dynastack Drive.** 8-page bulletin showing by means of phantom views, detailed information, and sketches the principle of "the simplest, surest, smoothest mechanism ever devised for fork-lift truck power transmission." Clark Equipment Co.

10. **The Use of Duntube Collectors in the Manufacture of Ready-Mix Concrete.** 4-page, 2-color bulletin in the form of an industry report. A detailed description of the installation of this system in the plant of a well-known concrete manufacturing concern, accompanied by photographs and a flow chart. American Wheelabrator & Equipment Corp.

11. **Why Preformed? 20 Questions About Preformed Wire Rope.** Vest-pocket folder supplying information on such topics as the construction of "Preformed" wire rope, its service and safety features, applications, strength, etc. Macwhyte Co.

12. **How to Solve Corrosion Problems with Chemalloy High-Alloy Castings.** 6-page bulletin which features two important charts to aid in selecting the correct alloy for most corrosive conditions. Also lists standard corrosion-resistant alloys, showing ACI types, AISI types and Chemalloy grades with their nominal composition, mechanical properties and descriptive remarks about each. Electro-Alloys Division, American Brake Shoe Co.

13. **Hobart Presents a Complete Line of Arc Welders, Electrodes and Accessories.** 8-page, 2-color catalog containing illustrations, descriptions, dimensions and specifications of the Hobart complete line of "Simplified" arc welders. Various features comprising the machine are individually illustrated and described. Also listed is a high-frequency stabilizer attachment for use with any standard a.c. transformer-type welder of 500 amperes or less. Hobart Bros. Co.

14. **South Bend No. 9-H Turret Lathes. Catalog No. 67-T.** By means of excellent illustrations and detailed explanatory material the construction, special features, and performance of these lathes are given in full, together with catalog numbers. Specifications, designations and descriptions of all attachments and accessories are included. South Bend Lathe Works.

15. **Gruendler All Purpose Mobile Crushing Plant. Bulletin No. BR-55-3.** 4 pages. A graphic presentation of how the crusher works is given by means of a keyed cut-away view accompanied by a description and specifications. Gruendler Crusher & Pulverizer Co.

16. **Byers ¼ Yd. Mobile Crane and Carrier.** Salient features of the Byers Model 55-CC are given in this 6-page folder. In addition to numerous illustrations of important parts, accompanied by explanatory text, there are complete specifications and a table of lifting capacities for this model. The Byers Machine Co.

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More Information, Please!

17. Torrington Self-Aligning Spherical Roller Bearings and Seal-Master Ball Bearing Head End Units (Bulletin 61-AM). First of these is a broadside listing the advantages of these bearings in reduced power consumption, longer service life, etc. The second describes and pictures ball bearings for head and units of Jeffrey 61-AM conveyors. Bearing Service Co.

18. Perma-Skin Vinyl Corrosion-Resistant Protective Coatings. 4-page folder listing the uses and applications of this coating, which has been used in the concrete industry and related fields. Dennis Chemical Co.

19. New Low-Heat Gas Welding Rod. 6-page publication (January, 1949, issue of The Eutectic Welder) containing "important information for welding engineers and welders". Features characteristics and applications of "Broussochrom 185FC", a product of The Eutectic Welding Alloys Corp.

20. Speed Selector—Variable V. Planetary. 2-color, 4-page flyer containing applications, principle of operation, and horsepower and torque ratings for this variable V-planetary speed selector. Speed Selector Inc.

21. The New 17 V Continuflo. 4-page folder on a new portable crushing and screening plant. It shows 9 views of the plant, as well as a detailed flow diagram and complete specifications. Pioneer Engineering Works, Inc.

22. Your Future in the Concrete Business. 2-color bulletin describing a new lightweight transit mixer. Data is also given on a portable weigh batcher. Willard Concrete Machinery Co., Ltd.

23. New Welding Accessories. 15 page catalog covering both oxyacetylene and electric arc welding accessories. Done in 2-colors this book describes goggles, hose, sparklighters, gloves, electrode holders, face shields, and other items. Air Reduction Sales Co.

24. New Wire Cloth Catalog. 85-page book containing specifications, descriptions and illustrations of meshes, weaves, metals and alloys used in this line of wire cloths and screens. Well illustrated with typical examples of applications of filter cloths, screens and special fabrications. Special section devoted to metallurgical data on nearly every major metal and alloy. The Cambridge Wire Cloth Co.

25. Nagle Industrial Pumps (Bulletin 4711). Thirty-five page 2-color book giving complete data on this line of pumps. Construction, design and maintenance features of these pumps are given along with specifications and dimensions. Nagle Pumps.

26. New! Dust-Free Fireproofer Dry-Cut Masonry Saw; The Fireproofer Dry Cutting Masonry Saw (Model F); and The Fireproofer Wet Cutting Masonry Saw (Model WF). Three bulletins featuring these saws, all designed to eliminate dust hazard. Martin Fireproofing Corp.

27. Wedglok Safety Connecting Links. Sketches and specifications of these links, also photographs of tests. Interstate Drop Forge Co.

28. Catalog 845—SealMaster Permanently Sealed Pre-Lubricated Self-Aligning Ball Bearing Units. 36 pages. Fully illustrated catalog furnishing complete information on these bearings. Stephens-Adamson Mfg. Co., Bearing Division.

29. Barrett Power Ox. Bulletin 4861. Action shots and closeups show the Power Ox, Pallet Ox and Tractor Ox on the job in various industries, as well as construction features. Specifications included. Barrett-Cravens Co.

30. Thor Silver Line Portable Electric Tools. 4-page bulletin featuring illustrations and descriptions of impact wrenches, grinders, drills, sanders, saws and polishers. Independent Pneumatic Tool Co.

31. Marmach Loader. Broadside showing special construction features and operation of this loader, described as "the loader with the arm and shoulder action". Two-color, keyed diagram shows steps in loading operation. Photographs illustrate the special features. Marion Machine Co.

32. Specialized Testing and Measuring Equipment Catalog. 43-page catalog containing 15 sections on such topics as magnetic equipment; time, speed, and torque measuring equipment; force, strain and thickness gauges; etc. General Electric Co., Apparatus Dept.

33. Better Stone Crushing with American Hammermills and Rolling Mills. Bulletin 147. Gives capacities, ratings and dimensions of American's complete line of heavy-duty crushers. Hammer types for specific reduction purposes are illustrated; blueprints are included. American Pulverizer Co.

34. Keystone Krane Karriage. 6-page bulletin (arranged for filing) containing details of construction of this carriage, accompanied by specifications, plan views, and cross sections. Keystone Driller Co.

35. Introducing Liddicoat Detachable Drill Bit. 2-color bulletin describing salient features of this "one-use, throw-away rock bit". Full information given on its construction, use, performance and applications. Calumet & Hecla Consolidated Copper Co.

36. World's Most Complete Line from One Set of Parts. Catalog 10 featuring the Air-Flo compressor for automotive and industrial purposes (Series "K"). Tenth anniversary models. Cutaway views show important features in design and construction. Complete specifications and photographs of compressors at work included. The Air-Flo Compressor Co.

37. E-M Synchroniser—The A B C of Large Induction Motors. 32-page bulletin (4 parts) covers the basic theory, operation, characteristics and applications, and control of large induction motors. Full treatment of squirrel-cage and wound rotor motors. Lavishly illustrated. Electric Machinery Mfg. Co.

38. Slash Handling Costs! 4-page bulletin supplying complete data on the Rapistan Floor-Veyor Jr., a power belt conveyor. Photographs show typical applications. Rapids-Standard Co., Inc.

39. Concrete Floor Costs Cut One-Third on Arizona Hotel Job. Illustrated flier describing how the use of Flexicore precast floor slabs were employed to effect considerable savings on construction costs for a hotel. The Flexicore Co., Inc.

40. Here's Power for Peak Production in Pit or Quarry. A pictorial, two-color review of the applications of International diesel- and carburetor-type power units in the pit and quarry industries. International Harvester Co.

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Industrial Sand Producers Discuss Problems at Hot Springs

By WALTER E. TRAUFFER

THE Fourteenth Annual Convention of the National Industrial Sand Association, held at The Homestead, Hot Springs, Va., May 11, 12 and 13, 1949, was one of the most successful yet held, both from the standpoint of attendance and the importance of the subjects discussed. As usual the meetings were held in the morning so that, after a late lunch. members were free to play golf, take the hot baths, indulge in the many other pursuits this outstanding resort affords. The Association golf tournaments for both men and women were features. On the second night of the meeting Clarence R. Wolf (National Pulverizing Co., Millville, N. J.) showed his excellent color movies of past meetings dating from back before the war up to the last one. A barbecue and barn dance, held indoors because of the cool weather, was enjoyed by all. The usual entertainment provided at these affairs was outshone by George F. Pettinos, Jr. (Cape May Sand & Gravel Co., Philadelphia, Pa.) who did one of the best exhibition Charlestons we have ever seen. A new member company, the Concrete Materials Co., Waterloo, Iowa, was represented by a golfing quartet, Mr. and Mrs. Fred E. Bellamy, and Mr. and Mrs. Gene Mason, who will make the present association golf champions of both sexes look to their laurels.

Officers and Directors At this meeting all officers were reelected, as follows: President, George A. Thornton (Ottawa Silica Co., Ottawa, Ill.); vice president, Sterling N. Farmer (Sand Products Corp., Cleveland, O.); treasurer, C. M. Hardy (Hougland & Hardy, Evansville, Ind.)

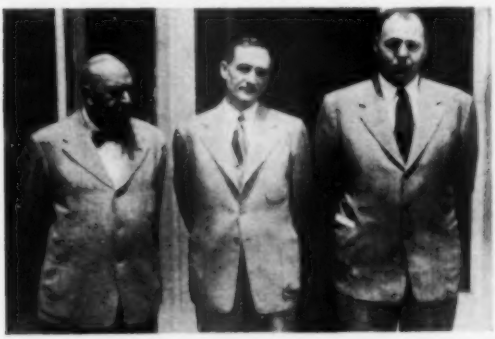
New directors are: Geo. F. Pettinos, Jr. (Cape May Sand & Gravel Co.); John F. Putnam (National Silica Co., Oregon, Ill.); Charles G. Runkle (Ayers Mineral Co., Zanesville, O.) Reelected were: James B. Bergs, (Pioneer Silica Products Co., St. Louis, Mo.); James S. Coxey, Jr.,(Industrial Silica Corp., Youngstown, O.); Arthur B. Schlesinger, (New Jersey Pulverizing Co., New York, N. Y.)

Association Affairs On the first day reports were presented on various association matters and by the various committees. It was announced that the Fall meeting would be held at The Greenbrier, White Sulphur Springs, W. Va., October 19, 20 and 21, 1949. The Fifteenth Annual Meeting will be held at the Homestead on May 10, 11 and 12, 1950. No decision has yet been arrived at for later meetings.

Stanton Walker of the Association reported on the activities of the committees on hygiene, packaging silica flour, foundry sand and abrasive blasting. He told of the work being done in cooperation with bag companies on the bagging of ground silica sand and recovery of the resultant dust. Specific recommendations, he thought, would be available at the time of the Fall meeting. He also mentioned studies which should increase the accuracy with which the characteristics of various types of sand can be determined. With respect to the Manual on Sand Blasting, Mr. Walker pointed out that the demands for the initial edition had been so heavy that a second and improved edition was necessary. Most of the demands for this manual, he said, come from those dealing with safety in foundry operations.

J. S. Coxey, Jr. (Industrial Silica Corp., Youngstown, Ohio); N. C. Bos (John N. Bos Sand Co., Chicago, Ill.).

Left to right: John F. Putnam (National Silica Co., Oregon, Ill.); Charles G. Runkle (Ayers Mineral Co., Zanesville, Ohio); George F. Pettinos, Jr. (Cape May Sand & Gravel Co., Philadelphia, Pa.).



Left to right: Mr. and Mrs. Gene Mason and Mr. and Mrs. Fred E. Bellamy (Concrete Materials Co., Waterloo, Iowa).

Lyle T. Manley (Manley Sand Co., Rockton, Ill.); W. J. Cannon (Nugent Sand Co., Muskegon, Mich.).
Mr. and Mrs. E. M. Durstine (Keener Sand & Clay Co., Columbus, Ohio); Mr. and Mrs. W. H. Woodward (Ottawa Silica Co., Ottawa, Ill.).

Industry Prospects One of the most interesting discussions at this meeting was the annual one on industry conditions and prospects. In addition to the reports given by selected members from various areas impromptu reports from other members helped to give a reasonably accurate picture of things throughout the industry as a whole. Generally speaking 1948 was probably the best year in history for the industry in general with the demand running at record levels to the end of the year. Many producers reported that the demand in the first quarter of 1949 was equal to that in 1948 but others reported drops of up to 35 percent. The average for the industry was a decrease of about 15 percent and prospects were for a further drop in the second quarter to about 25 percent below the same period in 1948. A few expected an increased demand soon but most felt that there would be little if any increase in demand this year.

Several commented on the fact that recent freight rate increases had restricted the area into which they could ship economically and had greatly increased the percentage of shipping being done by truck. All were agreed that an ample number of all types of railroad cars is now available but that most of them are received in very bad condition and must be cleaned up at great cost to producers. Several told of the serious consequences which resulted from contamination of sand by foreign substances remaining in the cracks of car floors even after careful cleaning. Especially detrimental were unexpanded vermiculite, calcined dolomite, soda ash, sulphur, etc. Even the infinitesimal quantities of foreign matter remaining in burlap bags used for caulking can cause trouble.

Judging from these reports there has been no price cutting as yet but the pressure for reductions is strong in some areas. There was a feeling that the industry as a whole will be handicapped in this respect because it held the line on prices better than most others and now has little leeway for reductions.

Economic Outlook "The Economic Outlook for 1949" was described by Ewan Clague, Commissioner of Labor Statistics, with the aid of a comprehensive series of charts. A wholesale price index showed that farm prices led all others by a slight margin after World War I; that all prices dropped sharply in 1920-21 and then leveled off until 1930 when they all dropped again, with farm prices much the lowest of all. Farm prices, said Mr. Clauge, remained at about the 1914 level until 1940, but then rose to nearly three times that level by January 1948, Industrial prices rose less sharply and all have since dropped, farm prices the most sharply but still remaining well above the others, and on the average still well above support levels.

Various consumers price index charts were used to illustrate that the cost of living for a moderate income family in a large city is now from 10 to 15 percent below the peak of late 1948. He pointed out that of the six major items in the cost of living rent was the only one which remained below the post-World War I level, due, of course, to rent control. Now at least three of the others are expected to continue to drop and only rents are expected to increase.

The index of weekly earnings in manufacturing, adjusted to the consumers price index, in World War I

Left to right: P. W. Palmer (Browntown Silica Co., Browntown, Wisc.); Junius M. Strouss (Deckers Creek Sand Co., Morgantown, W. Va.); T. C. Matthews (Pennsylvania Glass Sand Corp., Lewistown, Pa.); Marcus S. Wright, Jr. (South River Sand Co., Old Bridge, N. J.).

Mr. and Mrs. Russell Cronenweth (Great Lakes Foundry Sand Co., Detroit, Mich.).

Vincent P. Ahearn with (left) Mrs. T. C. Matthews and (right) Mrs. T. C. Waters.

In the foreground are Mr. and Mrs. E. W. Finkbiner (South Jersey Sand Co., Dividing Creek, N. J.) with Mr. and Mrs. John H. Newhouser of the same company.

never went more than 20 percent over 1914 until 1925 when it rose to 25 percent above. During World War II the index reached a peak of 55 percent over the 1939-40 level, then dropped to about 30 percent above, and has remained there. The worker now, said Mr. Clague, is better off than before the war but not quite as well as during the war.

A chart of employment in non-agricultural establishments, covering about 45 of the 60 million workers employed, showed that the manufacturing industries are primarily responsible for the increase in unemployment, having dropped off from about 18 million during the war to 16.5 million in 1948 and about 15.5 million now. Other categories showed much smaller losses. This loss, he said, can be readily absorbed by an increased volume of construction.

Mr. Clague pointed out that most of the veterans now in school will graduate in June and add a large reserve of the most employable type of labor to the existing pool. Unemployment, he said, has been ahead of 1948 every month of this year but since 1946, as the unemployment benefits paid out have increased those paid to veterans have dropped. This balancing effect has kept the number of unemployed for the past several years in the vicinity of 3 million persons. He feels that unemployment in the next few years may total 4 or even 5 millions but expects no depression. Conditions now, he said, are worst in New England and California.

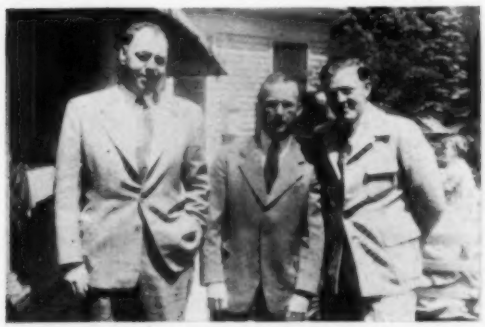
The output per man hour in manufacturing increased gradually up to World War I and then resumed its climb, forming on a chart a nearly straight line from a level of 39 in 1909 to 100 in 1939. Census data now being accumulated and prepared will show the progress made since then. Mr. Clague said that a continuation of the upward climb is expected from now on.

Mr. Clague feels that as unemployment increases the older worker problem will become more serious and will increase pressure for a lower pension age. This, he believes, is the leading social problem for the next 25 years or more. Most people, he said, don't want to retire but changes in industries will force some out. The retirement age, he believes, may be dropped to 60 or less if conditions require. He suggested the retraining of workers pushed out of jobs by age so that they can do some less exacting work, otherwise the pension load will become terrific. This is complicated by the reluctance of older workers to adjust themselves to less responsibility and pay.

Mr. Clague summed up by asserting that we are now in an adjustment period similar to the one after the Civil War, and which will last for a number of years. A gradual decline of prices and good employment are expected with no sharp drops as in 1921. Many things, including farm supports, bank insurance, etc., will prevent any serious depression.

Railroad Service "Railroad Transportation Service in 1949" was the subject of a discussion by Arthur H. Gass, Chairman, Car Service Division, Association of American Railroads. Traffic levels, he said, are now about the same as in 1942, but the rails now own 1,670,000 cars compared to 1,664,000 then. While there are now less engines than at the beginning of the war, more of these are diesels, which are more efficient and have greater availability. In 1942 there were only 1,365 diesel locomotives; now there are 6,105. The reduced turnaround time and an increase in CTC (cen-

(*Continued on page 175*)



Nearly always together were: (left) George F. Pettinos, Jr., and A. T. Harris, Jr. (Cape May Sand & Gravel Co.) and John H. Miller (Mifflin Sand Co., Lewistown, Pa.).
Caught in the act with stereoscope and movie cameras, respectively, were: P. W. Palmer and C. R. Wolf (National Pulverizing Co., Millville, N. J.).

• General view of the quarry, showing primary crusher building in the new location and the secondary crusher building on the levee. The small tower structure behind the secondary crusher is a transfer tower for the belts which close circuit the hammermill.

MISSOURI PORTLAND CEMENT CO. MODERNIZES ITS QUARRY AT FORT BELLEFONTAINE

By
L. A. Wagner
Director of Engineering and Research

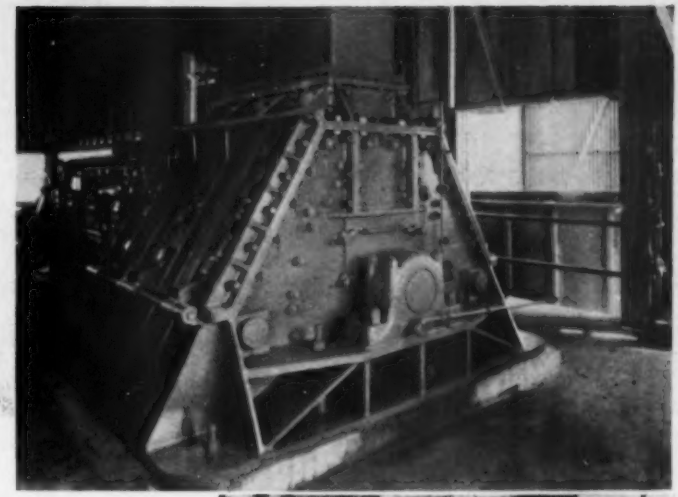
• The primary crusher discharges directly on a 36-in. belt which feeds the impactor hammermill. The transformer substation is at left center.

ON the south bank of the Missouri River about 9 miles north of the City of St. Louis, the Missouri Portland Cement Company operates a limestone quarry which serves its cement plant, located on the Mississippi River just at the northern edge of the city. Since this quarry has been operating for some 45 years, there is a massive hole in the ground at its location and, furthermore, since it is below the banks of the adjacent Missouri River, it frequently catches the eye of travelers along the highway. It is a high-limestone quarry and supplies about 600,000 tons of rock a year for the cement plant. The crushed stone is hauled to the plant in company-owned, standard hopper-bottom railroad cars by the C.B.&Q. Railroad.

Complete renewal of the crushing and loading facilities at this quarry has recently been completed and a description of these new facilities along with photographs of them is the subject of this article.

As happens in any quarry, the operating faces had moved farther and farther away from the primary crusher until after some 40-odd years the time finally came when it was necessary to move the crushing facilities up to the vicinity of the quarry faces. While making this change it was further decided to install completely new equipment. This consisted of a 56-in. by 72-in. Traylor jaw crusher, a 15-50 Pennsylvania impactor-type hammermill, Tyler screens for closed circuiting the hammermill, and new loading bins with power-operated gates underneath them which permit the loading of a 60-ton standard railroad hopper car in about 30 seconds.

The accompanying photographs are self-explanatory and about all that needs to be added is that the capacity of the new installation is 400 t.p.h. when crushing to 1-in. maximum and 325 t.p.h. when crushing to ⅝-in. maximum. The horsepower on the primary crusher is 250, and 600 horsepower is used on the impactor. The feeder to the primary crusher is a 72-in. Traylor apron unit, which has been found very helpful in maintaining an even flow of stone to the primary crusher. This in turn assists in obtaining uniform operation of the entire system.

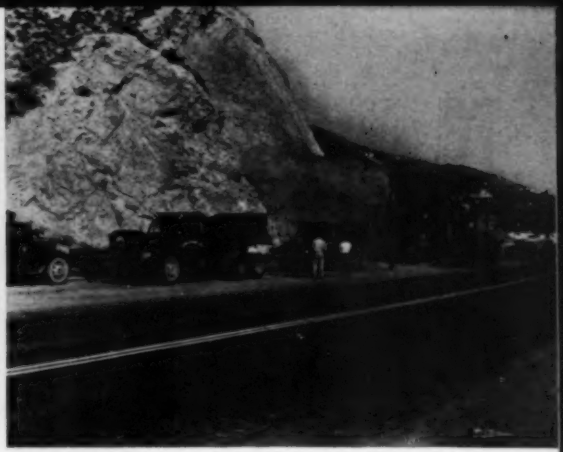


• Impactor hammermill. The drive is a 600 hp., 775 rpm. diesel engine seen in the left rear.

• Looking across the top of the 56- by 72-in. jaw crusher toward the truck hopper and feeder. The operator's control room is in the upper left hand corner.

• Screens which close circuit the hammermill.

• Overall view of Dicco-Dix-Syl operations along U.S. 101-Bypass.



• The crushing plant, mounted on pneumatic tires, was towed to Malibu Creek.

PORTABLE PLANT HELPS ELIMINATE MALIBU BEACH, CALIF., BOTTLENECK

By
HARRY F. UTLEY

southern ON THE SPOT turnpike

CALIFORNIA'S highway-construction program, restricted during hostilities and the early post-war period because of material, equipment and man-power shortages, is now in full swing.

One of the bottlenecks being eliminated is on the Coast Highway (U. S. 101-Bypass) at Malibu Beach, north of Santa Monica. Here, the Santa Monica Range meets the sea and the roadway is being straightened and widened to a minimum of four 12-ft. traffic lanes.

This 3-mile stretch, under contract to the Dicco-Dix-Syl Const. Co. of Bakersfield, Calif., including the carving off of a 40-ft. slice from a projecting mesa on a 160-ft. face to permit widening of the right-of-way. At the same time, the contractor discovered that the rock, sand and natural binder in the material to be removed from the cliff would provide an ideal supply for the manufacture of crusher-run base material for the new roadway.

Selected to do the job was a Universal Engineering Corp. Model 293Q "Pacemaker" portable crushing plant which was purchased from the distributor, Industrial Equipment Corp. of Southern California, Los Angeles. The material was shot, dug, and dozed to the plant which was set up conveniently close. After the cut was brought to finish grade and the 80,000 cu. yds. or so of material removed had been crushed and trucked to the roadbed, it was found that the project still lacked the required amount of base rock. There also remained the task of producing the fine aggregate needed to supply the Standard Steel Corp. asphalt plant which was to supply the hot-mixed material for surfacing the new portions of the highway. So the crushing plant, mounted on large pneumatic tires, was quickly towed a mile or so northward to Malibu Creek, where it went to work again with little loss of time processing gravel excavated from the stream bed.

• Portable crushing plant, showing rotary elevator at right and screen at top left. Side conveyor is loading hot-mix fines to stacker.

On location at Malibu Creek, the plant is being supplied by a 2-cu. yd. dragline and a bulldozer which keep the plant hopper filled. Two stacker conveyors build up stockpiles of (1) fines for the hot-mix plant and (2) base-rock for the road bed.

The Pacemaker plant incorporates a Universal 20- by 36-in. primary jaw crusher, a set of "twin-dual" rolls for secondary reduction, a Simplicity 4- by 10-ft. 2½-deck sizing screen, a Rotavator revolving elevator, and the necessary belt conveyors.

The roll crusher is normally in closed circuit with the screen and is in itself interesting since it incorporates two sets of double rolls of different diameters but mounted on common shafting. This compact arrangement, ideally suited to a portable plant, gives the same result as would two separate roll crushers.

A Caterpillar D13000 diesel engine powers the entire crushng plant. A belt conveyor recovers the hot-mix plant aggregate via a loading tunnel and runs direct to the storage bins of the black-top plant which is only about 200 feet distant from the crusher.

Richard Hon is resident engineer on the project for the California Dept. of Highways. Paul Woehl is project superintendent. The job is slated for completion about June 15, 1949.

N.I.S.A.

(*Continued from page* 171)

tralized train control) trackage have helped to get more out of existing equipment. Mr. Clague mentioned the many new uses being found for covered hopper cars. Two years ago there were 13,000 such cars and now there are 17,665, with 2,944 more on order.

Traffic Program William W. Collin, Jr., commerce counsel for the association, described the "Traffic Program of the Industrial Sand Industry." He also gave a quick picture of the increasing control of the Interstate Commerce Commission over railroad freight rates and of the present rate structure, which is the most complicated in history. Mr. Collin also mentioned the progress being made in presenting the industry's case before that body.

Legislative Developments "Current State Legislative Developments Affecting the Industrial Sand Industry" were described by Theodore C. Waters, Association Counsel. He said that all but four state legislatures are or were in session this year and that many bills on industrial health and workmens' compensation were brought before them. This legislation, he said, tends to increase compensation rates and benefits and broadens the responsibility of the employer with respect to occupational diseases, safety, etc. Some bills also included provisions for non-occupational disease and injury. The average employer, said Mr. Waters, feels that protection from disease and injury is more important than compensation, and that it pays in many ways to take all possible preventive measures.

Uniform Health Codes In the absence of Theodore F. Hatch, Industrial Hygiene Foundation, who was scheduled to discuss industrial hygiene codes, Mr. Waters told of developments in connection with the uniform code. He also said that the states of California, Rhode Island and New Jersey have legislation providing sickness insurance, and that New York enacted such insurance this year. Most of these provide for 13 weeks and $10 to $26 compensation. The subject of pneumoconiosis, said Mr. Waters, presents many problems and he described legislative developments in various states in this connection. In closing he said that industry faces increased government activity, increased state regulations, increased benefits, etc., and advised producers to cooperate in every possible way. He cited the benefits obtained by New Jersey producers and others through cooperation with these agencies and with each other.

Federal Legislation In describing "The Outlook for Federal Legislation" Charles A. Horsky traced important developments so far this year, concentrating on the situation with reference to the anti-trust laws, amendments to the Wage and Hour Law, and to the Taft-Hartley Act.

MARTIN HAMMERSCHMIDT, secretary-treasurer of the Elmhurst-Chicago Stone Company of Elmhurst, Ill., is reported to have caught a walleyed pike weighing 16 lbs. 4 oz. in Moose Lake, 50 miles from Ely, Minn. This catch is a record for pike in the Midwestern lakes. The world record fish of this species is 22 lbs. 4 oz., caught in 1943.

T. W. Ryan

The appointment of TOM W. RYAN as manager of operations of Basic Refractories, Inc., is announced by Howard P. Eells, Jr., president.

Mr. Ryan is a former executive vice-president and director of the St. Johns River Shipbuilding Company. Prior to that he was connected with the Thompson-Starrett Company, where he rose from the ranks to the position of vice-president.

BRIG. GEN. SAMUEL D. STURGIS JR. recently took over the duties of division engineer, Missouri River Division, for the Corps of Engineers. He succeeds Maj. Gen. Lewis A. Pick, who is now Chief of Engineers.

An important phase of General Sturgis's new assignment will be to carry forward a vast river development program known as the Pick-Sloan Plan for the Missouri Basin, which provides for flood control, irrigation, power development, navigation and other public uses of water resources.

REAR ADMIRAL PAUL L. MATHER, USN, Ret., was sworn in on June 6 as administrator, War Assets Administration, succeeding Jess Larson, who was appointed by the President to be administrator of the Federal Works Administration.

In a brief statement after he had taken the oath, Admiral Mather said he would continue the policies of his predecessor for speedy and orderly liquidation of the War Assets Administration as directed by the Congress.

R. A. HUMMEL, president of the Lone Star Cement Corporation, has been elected a director of the American and Foreign Power Company, Inc.

ROBERT C. HUGHES, formerly president of Hughes Insulation, Inc., Fair Haven, Vt., has been appointed sales manager in charge of rock wool sales of the building products division, Great Lakes Carbon Corp. He will be located in the corporation's New York executive offices.

The National Gypsum Co. has announced the appointment of DAVID G. STENBERG to head its Chicago district sales office and of CARL F. ENGLEBRY as manager of masons' supply sales in the Buffalo office, a position formerly held by Mr. Stenberg. Mr. Englebry previously held positions in the production and research departments.

FRANK B. NICHOLSON has been appointed controller of the Metropolitan Sand and Gravel Corporation of Port Washington, N. Y.

R. ROY HARLEY of the National Gypsum Company has been elected treasurer of the Buffalo chapter of the National Office Management Association.

The board of directors of The National Supply Co. on June 2 elected HOWARD W. JORDAN a director of the company, to fill a vacancy on the board created by the resignation of J. H. Hillman Jr. Mr. Jordan is chairman of the board of Metropolitan Sand & Gravel Corporation, Port Washington, New York.

DR. MORRIS M. LEIGHTON, chief of the State Geological Survey, Urbana, has been named president-elect of the Society of Economic Geologists for the annual term 1950-51. Dr. Leighton last fall completed his 25th year as chief of the Illinois Survey, which under his administration has grown to be one of the foremost geological surveys in the United States.

JOHN E. MCDANIEL JR. has been appointed to the service engineering staff of Marquette Cement Manufacturing Company. He will operate out of the company's Memphis, Tenn., sales office as service engineer for the Southern area. Mr. McDaniel has been employed as civil engineer with the U. S. Corps of Engineers in the Little Rock, Ark., and Vicksburg, Miss., districts.

J. E. McDaniel Jr.

WILLIAM G. JEFFREY has been transferred from Chico to Modesto, Calif., as sales representative for Calaveras Cement Company. He will have headquarters in the Modesto Builders Exchange. Mr Jeffrey served in the Marine Corps during World War II.

Effective June 1, 1949, RICHARD D. MAYNE, manager of the Hannibal, Mo., plant of Universal Atlas Cement Company, U. S. Steel Corporation subsidiary, was appointed manager of the company's plant at Hudson, N. Y. He succeeds W. Scott Wilson, who died on May 15. Mr. Mayne joined Universal Atlas in Chicago in 1937 as industrial engineer and served successively as superintendent of the gypsum operation at Clarence Center, N. Y., quarry and mine superintendent at Hannibal, and assistant to the general operating manager, New York. In 1946, Mr. Mayne was appointed plant manager at Hannibal.

He is a member of the American Institute of Mining and Metallurgical Engineers.

obituaries

W. E. RYDER, 82, president and founder of Rock Products Corp. died recently at Ada, Okla. Mr. Ryder was also a founder and president of the Standard Asbestos Manufacturing and Insulating Co. He was active in the construction of Rock Products Corp. facilities at Troy, Okla., until a year ago when his health failed, necessitating his retirement from active supervision of the project.

ARTHUR HENRY GEORGE, 67, died at his home in Andersonville, Ind., recently. He was the owner of the A. H. George Stone Company at Andersonville and Glenwood, Ind. He had been ill for several years.

HARRY A. MOTTIN, an employee of the Pine Bluff Sand and Gravel Company at Iatan, Mo., was drowned recently in the Missouri River near the firm's plant. The accident was not witnessed, and it is believed that Mr. Mottin fell into the river while going to work as a night watchman.

GEORGE F. BAYLE JR., former president and general manager of the Glens Falls Portland Cement Company, died on May 15 after a long illness, at the age of 61.

LAWRENCE EDGAR KINCAID, 52, of Athens, Ill., foreman at the Athens Stone quarry, was fatally injured when he was crushed between the bed and the frame of a dump truck which he was operating at the quarry, three miles north of Athens.

Kincaid has been employed at the quarry for the last four years. He was a veteran of World War I.

JOHN L. BARRETT, district sales manager for the Lehigh Portland Cement Company, died on April 14 at a hospital in Philadelphia. He was 57 years of age.

FRANKLIN C. CHENEY, president of the Cheney Lime and Cement Company of Birmingham, Ala., died at his home in Allgood, Ala., on June 1 after an extended illness. He was 69 years of age.

Mr. Cheney founded his business in Birmingham and Allgood about 46 years ago. He was a former president of the Southeastern Lime Association.

ABRAHAM ROSENFELD, father of Joseph Rosenfeld, operator of the Rosenfeld Sand & Stone Company, Milford, Calif., was fatally injured in an accident at the plant. A company truck accidentally backed into Mr. Rosenfeld on May 16. The firm was a father-and-son business which began from a backyard venture and grew into an enterprise covering more than 400 acres in Milford.

CLARENCE WALTER UTZMAN, 71 years of age, a former executive of the United States Gypsum Company and an inventor and engineer, died on May 12 at Los Angeles, Calif.

While associated with U. S. Gypsum, Mr. Utzman discovered the process for making "sheetrock," a wall-board product. He also invented several pieces of equipment used in its manufacture.

WILLIAM CLARK DRENNAN SR., an employee of the Marblehead Lime Company at Hannibal, Mo., for the last 15 years, died at a local hospital on April 6 after an illness of three months' duration. Mr. Drennan had been employed as plant clerk by the lime concern.

ANCIL ELDON LIERLY, former superintendent of the Missouri Gravel Company's plant at Plainville, Ill., died on April 21 in a hospital at Quincy, Ill., of injuries sustained in an automobile accident several days earlier. Mr. Lierly was 37 years of age.

Keystone Quarry Repairs Damages

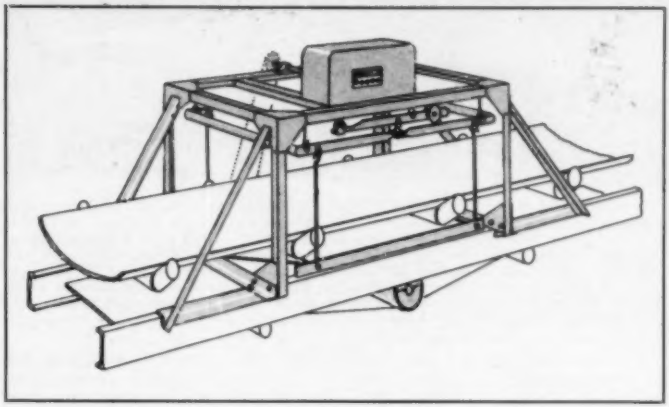
The Keystone quarry of Chewelah, Wash., has resumed operations, Howard Ziebell, general manager of Northwest Magnesite Company, announced. The quarry was razed by a $50,000 fire last December when thawing operations ignited the wooden substructure under loading bins.

Ziebell said the building is now fireproof. Steel has been used to replace all wooden supports and a new steel bin has replaced the one damaged by fire.

L. M. Chambers, who owned the controlling interest in the Producers Material Co., of near Berlin, Mo., sold out recently to Reno Bros. of Overland Park, Kan. Mr. Chambers owns and operates another rock crusher near Chillicothe. The company has about 10,000 tons of crushed rock to deliver on King Bill Road contracts. Approximately 7500 tons of agricultural limestone has been stockpiled.

new machinery and supplies

PIT AND QUARRY



● Continuous Weighing Scale

The Sintering Machinery Corporation, 70 Pine St., New York, original patentors of the "tilting wheel and disc" mechanical weight integrator, announce a unit type belt conveyor scale which is assembled and shipped as a complete unit, requiring fewer than a dozen bolts for its complete installation.

This "Transportometer" can be installed on any existing horizontal, inclined or declined belt conveyor of any width or speed, to weigh automatically and continuously, indicate and totalize the tonnage at any rate up to 2,000 t.p.h.

"Transportometers" are available for automatically regulating preceding feeder conveyors, rotary valves, etc., and can be provided with remote mounted chart recorders, tonnage indicators, duplicate totalizers and predetermined batch counters.

● Large-Size Classifier

The Deister Concentrator Co., Inc., 901 Glasgow Ave., Fort Wayne, Ind., has developed a giant classifier which maintains teeter and zone densities hitherto impossible in large cell cross sections necessary for handling substantial capacities.

The "Concenco SuperSorter" is available to meet the long-felt need for a multiple-spigot, rising current classifier of sufficiently high capacity for economic handling of sand, iron ore, phosphate rock, coal and similar granular materials. SuperSorters reportedly have proven themselves in performance, both capacity-wise and for efficiency of classification.

The all-steel cell unit construction, including top launder and 6-in. H-section supporting legs, stands 14 ft. high. It is 6 ft. wide and accounts for approximately 5 ft. in the overall length of the machine. The 8-cell unit has a length of 40 ft., and weighs approximately 16 tons.

Each classified spigot product is intermittently drawn off, with measured precision, from a quiescent bed at the bottom of the cell. High-capacity discharge of product is maintained with minimum water content and without disturbing the rising water currents or unbalancing classification in the sorting column immediately above. The novel constrictor valve mechanisms that control the draw-off from each cell are readily adjustable in operation over a wide operating range from open 90 percent, to closed during 100 percent of each cycle. The constrictor valves permit a positively measured and uniform discharge rate from each cell.

The only power required is for actuation of the tandem-operated constrictor valve mechanisms. A 1 to 1½ hp. motor and gear reducer amply provides for even the largest size units.

● Hard-Surfacing Powder

An improved hard-surfacing powder, called "Surfaceweld A," has been made available by The Lincoln Electric Co. of Cleveland, O. The powder, to be applied with a carbon electrode, is used for depositing a thin chromium carbide type of hard surface that is highly resistant to abrasive wear and corrosion.

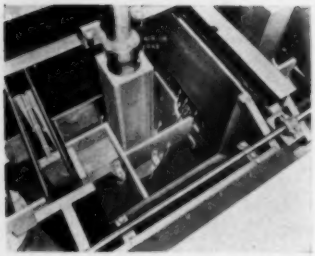
The operating characteristics of Surfaceweld A give it a wide field of application. One of its outstanding characteristics is its ability to be used with an A.-C. arc with a single carbon electrode. It may also be applied with a twin carbon arc or may be used with A.-C. carbon electrode negative.

Surfaceweld A is designed for surfacing applications where the use of hard-surfacing electrodes is not always practical, such as thin work, thin deposits, for use with small A.-C. welders.

It is also used in preference to hard-surfacing electrodes for certain conditions of severe abrasion.

The hardness of the smooth dense deposit of Surfaceweld A is approximately 54-61 Rockwell C for one layer and 57-63 for multiple layers. Hardness depends somewhat on the amount of admixture. The deposit develops full hardness in the as-deposited condition; it maintains hardness and resists scaling at elevated temperatures. Corrosion resistance is comparable to that of stainless steel.

The powder form of hard surfacing may reportedly be put to good use on such jobs as maintaining the cutting edge of mixing blades, drill bits, surfacing augers, dipper teeth, bucket lips, forming dies, cement block forms, scraper blades, cableway drums.



Interior view of Denver "Sub-A" (acid type) flotation machine. Machines of this type are built on the same basic design as Standard Denver "Sub-A's" except that where the acid pulp comes in contact with the machine, the parts are of wood or other acid-resistant material. Note the sand relief opening (white circle) which permits passage of coarse particles that will not rise with the balance of the pulp over the cell-to-cell weir control. This feature prevents "sanding up" with consequent ability to handle a coarse feed. Manufactured by Denver Equipment Co., Denver, Colo.

● One-Man Bow Saw

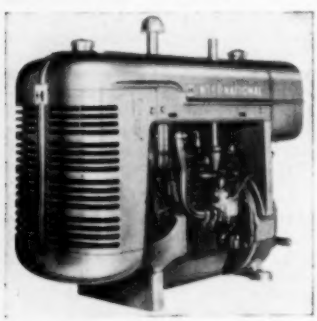
Henry Disston and Sons, Inc., Tacony, Philadelphia 35, Pa., have added a one-man bow saw to their growing line of chain saws. This lightweight cutting unit is powered by a 3½-hp. 2-cycle Mercury gasoline engine. On the bow saw a straddle type chain travels on an open circular guide rail. An extra-long casting of high-strength aluminum alloy keeps branches and underbrush from catching in the top of the chain and and gives the guide positive rigidity. This feature is especially valuable in making a cut close to the ground.

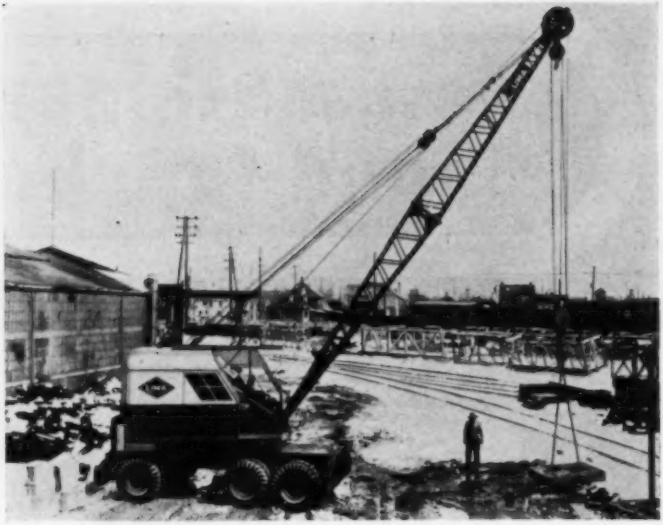
Other features include full precision bearing construction, a self-winding starter and an automatic positive chain lubrication. A fuel meter provides positive flow of the correct fuel mixture at all times and in any position, at the same time acting as a governor to control engine speed.

● New 16-Hp. Engine

A new 4-cylinder gasoline engine has been developed by the Industrial Power Division of International Harvester Company. Addition of the 16-hp. U-1 expands the International line of carbureted engines to five.

The new engine is available as a stripped unit or with job-engineered attachments up to a complete power unit; it can be equipped to operate on either gasoline or natural gas. Stripped, it delivers a maximum of 16.3 b.hp. at 2500 r.p.m. Overall dimensions of the engine are 26 13/32 in. in length, 16 11/32 inches in width, and 25 in. in height. The engine itself weighs approximately 280 lbs; complete with power unit, 450 lbs.





The Lima Shovel and Crane Division of Lima-Hamilton Corporation, Lima, O., has added three new rubber-tired machines—Types 34-T, 34-M, and 604-M—to its line of cranes and shovels. The type 604-M, illustrated above, has a rotating assembly which incorporates all the basic features of the Lima Type 604, but with alterations to facilitate adaptation to truck mounting. An engine mounted in the rotating assembly supplies the power for all operations, including propelling in either direction. Rigid type outriggers are standard equipment. The carrier is equipped with oscillating tandem type rear axles which provide extra flexibility when working on even terrain. This unit has a lifting capacity of 35 tons.

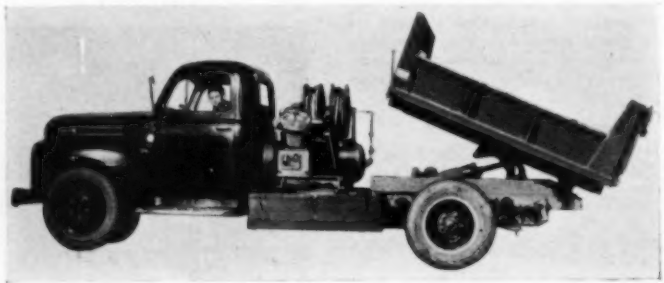
● Car Shaker

A new car shaker for emptying sand and gravel, slag and other granular materials from drop-bottom gondola cars has been placed on the market by Allis-Chalmers Manufacturing Company, Milwaukee, Wis. The device weighs approximately 5 tons and is designed to fit all sizes of gondola cars. It has an all-welded 11- by 5- by 4-ft. 4-in. steel body which is lowered to rest on the car body flanges by a hoister crane.

Vibratory motion is transmitted to the car through an eccentric shaft mounted on the shaker body by heavy-duty bearings. The unit is driven by a totally-enclosed, high-torque, rubber-mounted motor located inside the shaker body for full protection.

● Precision Level

A new sensitive 12-in. precision level has been developed by the South Bend Lathe Works, 156 E. Madison Street, South Bend 22, Ind. The level has a ground and graduated vial mounted in a 12-in. cast-iron frame. The vial is protected from accidental breakage by an aluminum-alloy cylinder which may be revolved to enclose the vial completely.



This compressor dump truck combination which consists of a Model 105 or 106 c.f.m. "Auto-Air" compressor mounted ahead of a standard dump body on the truck chassis has been developed by the Davey Compressor Company, Kent, O. The compressor is driven directly from the truck engine through the Davey heavy duty power take-off.

● Vertical Shaft Type Engine

Clinton Machine Company, Clinton, Mich., has developed a vertical shaft type engine, the VS-700 series, that weighs approximately 35 lbs. and develops 1½ to 1¾ hp. All of these engines are 4-cycle, extra heavy-duty, full carburetor-equipped, and are available with or without mounting flange.

Other features of the Clinton VS-700 engine are needle bearings as main bearings, extra heavy spring-loaded oil seals, and an adjustable air-velocity governor.

● All-Electric Bagger

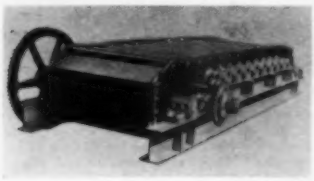
The Richardson Scale Company, Clifton, N. J., has announced production of a new, all-electric automatic duplex bagging scale. It accommodates gravity or power feed arrangements for bagging most materials normally put up in open-mouth paper or textile bags.

Designated as the Model E-50 Duplex, the new bagger comprises two scales with a common bagging spout. It has a normal range from 5 lb. to 25 lb. and from 25 lb. to 50 lb. Units of greater capacities can be furnished for special applications.

Claimed by the manufacturer to be the fastest bagging machine ever built, it is capable of handling 24 10-lb. bags and 18 25-lb. bags per minute, speeds varying with the type of material, method of feeding and size of unit weighing. Slip-on spouts are supplied for changing bag sizes as required.

The machine is totally enclosed to provide dustproof operation and all electrical construction is explosion-proof.

This "Model 50" apron feeder manufactured by the New Holland Manufacturing Company, Mountville, Pa., has a 28-ton hopper capacity. It is designed for any breaker requiring a feeder which can handle up to 50-in. material. It weighs 39,475 pounds, including a standard steel hopper made of 1-in. plate (not shown). The feeder is 50 in. wide, with 14-ft., 6-in. centers.



A DEISTER RECORD

243,000 Tons Without a Cloth Change

243,000 tons of material sized without a screen cloth change . . . that's the record of a 5' x 12' triple-deck Deister Vibrating Screen that helped increase plant production 400 per cent during its first season of operation.

Installed in 1946 at the Kickapoo Sand and Gravel Company Plant, Peru, Indiana, this Deister Screen has averaged 300 tons per hour . . . 270 tons of virgin feed, plus 30 tons of circulating load. Since its installation, this screen has required no service other than minor maintenance.

The rugged design and construction of Deister Vibrating Screens assure minimum maintenance and high capacity throughout long service life. Proved dependability, faster grading, and more accurate sizing have made Deister tops with operators the world over.

Write for Bulletin 27B—"Better Sizing Cheaper."

DEISTER SCREENS

DEISTER MACHINE CO.

FORT WAYNE 4, INDIANA

.. An Eagle Washer Exceeds it's Rated Capacity by 20 Tons per Hour at the Eagle Sand & Gravel Co.

This Eagle Washer-Classifier-Dehydrator has given satisfactory and efficient performance day after day for over two years at the Eagle Sand and Gravel Co. plant near Sioux Falls, South Dakota. Handling at times up to 20 tons per hour over its rated capacity, the Eagle has given continuous performance with only a few minor maintenance repairs.

Designed by co-owners William G. and Robert F. Bruns—who also supervised construction—this complete washing and screening plant processes several grades of concrete material for general sale. A dredge moves the raw material to a screening tower located over eight aggregate bins designed for gravity loading of trucks. Two screens are used for grading—the fine material from the lower screen feeds to the Eagle for complete washing and dewatering. The washed material is fed to a manually controlled two-way chute feeding two bins. When one is filled the material is chuted to the other to allow continuous operation.

The Eagle Washer attacks the cleansing problem two ways to assure positive results: (1) the tumbling, squeezing action of the conveyor screw rubs grain against grain to loosen all foreign material; (2) a rising column of water the length of tub floats out all undesirable material. The Long Weir with adjustable lips, coupled with volume of water feed, provides exact wash water control for retention of fines to any classification. Send for Catalog 47.

SINCE 1872 Progress...Service

Sand and Gravel Equipment

"SWINTEK" DREDGE LADDERS — SCREW WASHERS
LOG WASHERS — DEHYDRATORS — SAND TANKS
CLASSIFIERS

EAGLE IRON WORKS

133 Holcomb Ave. • Des Moines, Iowa

● Rubber-Tired Loader

A new materials-handling loader manufactured by Tractomotive Corporation, Deerfield, Ill., called the TL-W "Tracto-Loader," has a ½-cu. yd. standard bucket. It is mounted on rubber tires and has the bucket over the driving wheels, with the steering wheels in the rear. The design, according to the manufacturer, provides exceptionally good traction and makes steering easier, especially where the going is soft. This lessens operator fatigue, eliminates the necessity of dumping part of the load to keep from bogging down, and thus assures maximum production.

The TL-W's short overall length, 12 ft. with bucket down, and narrow width, 5 ft. 9 in. (outside tire measurements), mean that it is small enough to be used where working areas are limited. Close quarter operation is possible, too, because it does not have to ram into material to get a load. The bucket is eased into the material and picks up the load through forward crowding action and an automatic "tilt-back" feature.

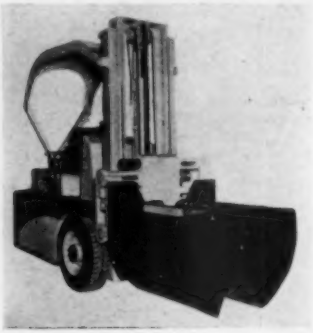
The bucket is hydraulically operated and positively controlled. It can be dumped in part or all at once and will fully load average dump trucks. Special service features that simplify maintenance of hydraulic system are one-piece, seamless steel tubings and hydraulic hose lines with detachable and re-usable fittings.

The Tracto-Loader is sold exclusively through Allis-Chalmers industrial track-type dealers.

This standard 3-compartment, 21-cu. yd. aggregate bin has been placed on the market by the New Holland Machine Company, Mountville, Pa. The bin measures 8 by 12 ft. and stands 16 ft. high, with a truck clearance of 8 ft.

● Lift-Truck Attachment

A clamshell bucket of 7/16-cu. yd. capacity for a lift-truck has been developed by the Hyster Company, Portland 8, Ore., as another variation of the "Load-



Grab" attachment for specialized materials handling.

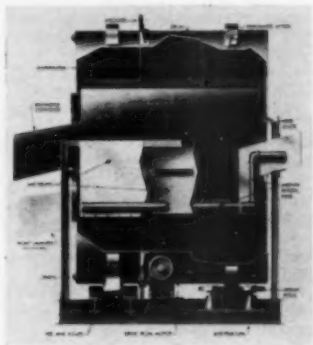
The only tool of its kind manufactured for use with a lift-truck, the clamshell is available only for the Hyster "40" (4,000-lb. capacity) lift-truck. The unit mounts on the sliding supports of the basic Load-Grab as optional equipment. Operated by a lever at the driver's right, the clamshell opens and closes by means of the same hydraulic power which spreads and contracts the arms of the standard Load-Grab (palletless materials-handling attachment).

A standard lifting height of 8¼ ft. (to the bottom of the closed bucket) makes it a valuable aid in such operations as loading and unloading trucks and railroad cars.

● Drum Separator

Western Machinery Company, San Francisco, Calif., has announced the addition of a drum separator to its line of equipment for heavy media separation. This new unit has been specifically developed to meet the increasing demand for an HMS separatory vessel that will treat coarse material. This drum separator will treat particle sizes ranging from 8 in. in capacity up to 420 t. p. h., depending on the size of units used.

These new machines are available in ten sizes, ranging from 6 to 14 ft., measured according to the outside diameter.



"Trouble-free screening is a habit with these SECO VIBRATING SCREENS"

says Sherman B. Saunders of
W. F. Saunders & Son, Nedrow, N. Y.

The Seco vibrating screen pictured above has been on the job over nine years in the modern sand and gravel plant of W. F. Saunders & Son, Nedrow, N. Y. Not only does it do a perfect job at screening—but it still operates smoothly and has never been shut down for repairs.

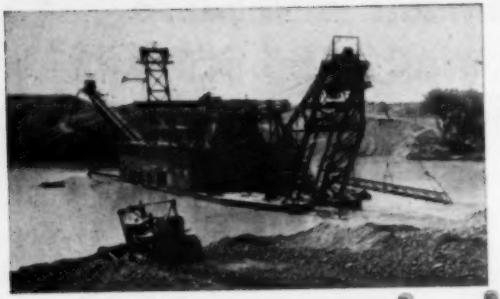
Here you see the second Seco screen in use in the Saunder's plant. This Seco screen was purchased because of the trouble-free performance record of the first one installed over nine years ago. Together they produce about 120 tons of sand and gravel per hour. Everywhere, on all types of screening jobs, from ag-lime to rip-rap. Seco screens are winning acclaim on performance.

Let Seco screening experts help you get trouble-free screening results. Models to fit every requirement. Write Dept. L for new Seco Catalog No. 203.

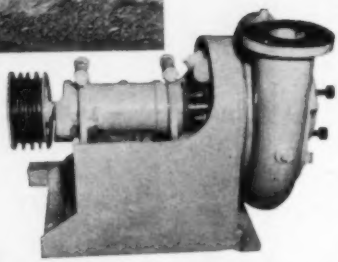
SECO VIBRATING SCREENS

SCREEN EQUIPMENT CO., INC.
1752 WALDEN AVENUE BUFFALO 21, NEW YORK
In Canada, United Steel Corp. Ltd., Toronto, Ont.

3404 HOURS CONTINUOUS TROUBLE-FREE OPERATION



YUBA Dredge No. 20 working at Hammonton, Cal., is equipped with Model "S" Yuba pump.



Model "S" 3" YUBA pump built for pumping sand in jig or sizing installations.

Actual Performance Record of YUBA Model "S" 8" Pump

Here's what the superintendent of a YUBA 18 Cu. ft. bucket line dredge wrote us under date of Oct. 4, 1948:

"For your information, the Model "S" (8") mud pump #880 in operation at Dredge No. 4 on Sept. 30, 1948 had completed 3,404 hours of operation without trouble or repairs."

This same customer has since purchased another 8", Model "S" and he has in use several 3" and 6" pumps of the same type.

YUBA Model "S" pump is a centrifugal type, designed especially for dredging mud, sand, or muddy water encountered in sand and gravel operations. Special alloys are used in castings to ensure long life with minimum loss of time for repairs. Our aim in building pumps, as with all dredge parts, is to keep your plant running—you profit only when it is operating.

You, too, can get higher running time by equipping your dredge with YUBA pumps. For full details, write or wire us NOW.

SAND and GRAVEL OPERATORS AIM AT —

1. High running time
2. High yardage
3. Clean product
4. Low operating cost

They get all 4 with YUBA dredges and equipment

YUBA MANUFACTURING CO.

Room 718, 351 California St., San Francisco 4, California, U. S. A.

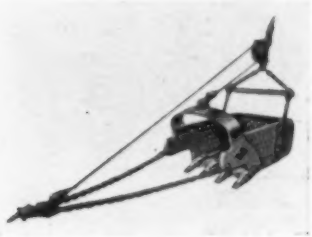
AGENTS { SIME, DARBY & CO., LTD. · SINGAPORE, KUALA LUMPUR, PENANG. SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.

CABLES: YUBAMAN, SAN FRANCISCO · SHAWDARBCO, LONDON

● Featherweight Dragline Buckets

A series of "Featherweight" perforated dragline buckets has been added to the line of materials-handling buckets and dippers manufactured by the Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Ill. For their capacities, it is claimed that these buckets are from 20 to 40 percent lighter than other makes.

Featherweights are of welded construction with 14 percent manganese



steel for the lip-and-socket point type teeth, sheave, wire rope sockets and dump chain links. Design and construction features are said to give these buckets the widest set corner teeth and sharpest cutting edge, requiring only ⅔ of the drawbar pull of the average bucket and only ⅔ of the distance of the average bucket for filling. They are available in the popular sizes of from ⅜- to 2-cu. yd. capacities.

● Ammeter and Voltmeter

A new a.-c. clamp ammeter and voltmeter with five current ranges up to 1000 amperes, and three voltage ranges up to 700 volts, has been developed by the Weston Electric Instrument Corporation, 617 Frelinghuysen Avenue, Newark 5, N. J. This instrument, Model 633 Type VA-1, measures alternating currents and voltages by simply placing the insulated regulator operated clamping jaw around the conductor. The jaws will accommodate conductors, bare or insulated, up to 2 in. in diameter.

Current and voltage readings can be made almost simultaneously by rotating the thumb selector switch to either the ampere or volt position. A pointer stop has been provided to show motor starting currents. This instrument has a rated accuracy within 3 percent of the full scale range when used on frequencies between 50 and 70 cycles.

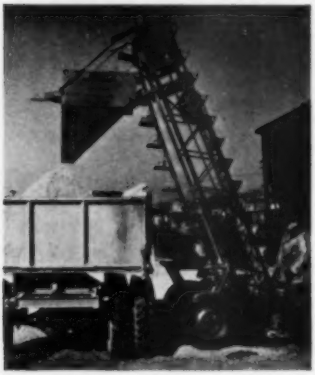
● Dust Respirator

A new dust respirator, S-600, has been developed by the Pulmosan Safety Equipment Corporation, 644 Pacific Street, Brooklyn, N. Y., for type "A" dusts. Features of this respirator include a 3-in. diameter silica dust filter; a compact exhalation valve; black alumilited parts for resistance to corrosion and light reflection; double nylon elastic head bands.

This new respirator provides comfortable protection against asbestos, cement, limestone, and gypsum dust.

● Bucket Elevator Unloader

Markroy Company, 6th & McCambridge, Madison, Ill., announces its new "Markroy" car unloader. A bucket-type elevator of tubular steel construction, the unloader transfers materials such as



gravel, stone, coal, aglime, sand, cement, aggregates, cinders and chemicals from hopper cars to truck or stockpile at the rate of 1½ to 2 t.p.m.

It is described as a versatile, mobile elevator that functions as a single operating unit. The device was designed for use in all applications where a bucket elevator of great flexibility and mobility can be used to advantage.

Foremost in the list of features claimed by the manufacturer is the complete elimination of the need for a concrete pit at trackside. In addition, the rail bed is not disturbed in any way and the removal of the unloader during location or movement of hopper cars is unnecessary. The Markroy feeder unit is readily installed beneath the rails and between two ties whose spread need only measure 16 in. or more. The equipment meets all railroad clearance specifications.

Easily transported from job to job in a small pickup truck, it can be operated by one man. Fully productive, continuous feed is assured by a patented gravity-assisted feeder. Rate of material flow is accelerated in its downward movement through the feeder by means of a special eccentric that imparts an upward and outward thrust, thus activating the feeder pans and aiding the normal flow provided by gravity.

● All-Purpose Hose

Following exhaustive tests, Goodyear Tire & Rubber Company's mechanical goods division announces the development of a new all-purpose hose.

Labeled "Ortac," the new hose product is capable of carrying air, water, oil, gasoline and acids of low concentration and temperature.

This hose has a vertically-braided rayon carcass and an oil-resisting synthetic tube, friction and cover. It is being manufactured in sizes from ⅛-in. to 1½-in. inside diameter in the company's Plant No. 2 at Akron.

FACTS ON

LIGHT-WEIGHT PIPE

FOR MINING SERVICE

This Helpful Book Gives Full Data on Applications and Performance Advantages of NAYLOR PIPE

If you have not already received a copy of this fully-illustrated guide for pipe users, write for it today.

Find out how Naylor light-weight pipe can serve you better on ventilating lines, high and low pressure water lines, air lines, hydraulicking, de-watering, drainage, suction lines, tailings lines.

Naylor Pipe

NAYLOR PIPE COMPANY

1257 East 92nd Street, Chicago 19, Illinois

New York Office: 350 Madison Avenue, New York 17, N. Y.

"Speaking of truck shovels.....
Why did you buy a MICHIGAN?"

"Because it's EASY to HANDLE!"

On the road, for example, it's as easy to drive as any ordinary truck. On the job, its control makes a hit with operators. MICHIGAN'S air ram clutches are fast and smooth . . . they take the work out of operating. My operators *like* those finger-tip air controls—and *I* know that they've paid off in faster, more efficient operation . . .

And then there's MICHIGAN'S *remote control.* When you pull onto the job, you're ready to go! There are no draglinks to disconnect, no adjustments to make. You can drive and steer from the turntable cab with the cab in any position. The turntable engine supplies the power.

Take all these easy-handling advantages together and you can see why I advise you to get a MICHIGAN!"

Write for Bulletin 100—
"On the Job with MICHIGAN"

DID YOU KNOW
you can buy
a brand new
MICHIGAN
TRUCK CRANE
complete with chassis
for as little as $10,250
F.O.B. factory?

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY
315 Second Street, Benton Harbor, Michigan, U.S.A.

● Oil Filter

A new oil filter has been developed by the Fuller Manufacturing Company, Kalamazoo, Mich., for use on Fuller transmissions as well as on most other makes equipped with standard SAE 6-bolt short-length power take-off openings. The six capscrews used to attach the power take-off cover plate can also be used to attach the new oil filter to the opening.

Transmission oil is forced in through the filter under pressure developed by the rotation of the transmission gears and shafts. As the oil is forced through the filter, foreign matter suspended in and circulating with the oil is deposited on the replaceable filter element and in the sump at the bottom of the housing. The cleaned oil is then channeled back into the transmission case. The use of the filter should not lengthen the interval between oil changes. Its primary function, according to Fuller engineers, is to assure clean oil between change periods, and less wear of bearings and bushings.

● All-Rubber-Center Couplings

"The Mighty Midget", an all-rubber-center coupling designed for improved power transmission in fractional horsepower motors has been added to the line of Morflex couplings, produced by Morse Chain Company, 7601 Central Avenue, Detroit 8, Mich.

The neoprene center member is said to give this coupling a service life much longer than ordinary couplings in its particular power range. Flexing caused by misalignment is absorbed by the entire member.

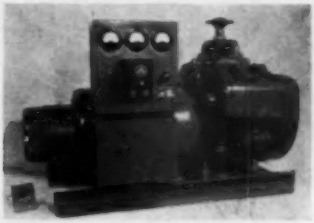
● Compressor Governor

Schramm, Inc., West Chester, Pa., has added a device called the "Pneumastat" to its line of portable engine-driven compressors. The Pneumastat is designed to regulate the speed of the compressor in accordance with air demand. As the pressure increases, the Pneumastat will adjust itself to balance the throttle in a new position, thereby reducing the speed of the compressor.

The manufacturer claims that this device will effect a fuel economy averaging 50 percent.

● Standby Power Plants

The Kato Engineering Company, Makato, Minn., has recently developed a line of power plants suitable for an emergency supply of electricity for power



and light. These machines are driven with one- two- and four-cylinder, air-cooled engines, equipped with high tension magnetos which eliminate the need for starting batteries.

The generators are large in proportion to the rated engine horsepower to facilitate starting single phase a.-c. motors. They are available with or without automatic voltage regulators.

These plants are designed to run at 1800 r.p.m., although the manufacturer recommends lower operating speeds where the plants are to be the only source of electrical supply. Katolight generators are available in capacities ranging from 5000 watts to 200 kilowatts at 60 cycles.

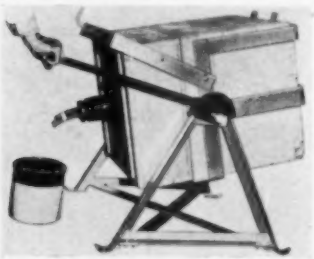
● Carboy Tilter

The new G-S safety carboy tilter with pouring spout provides a safe, fast and convenient method of draining acids and other liquids from carboys. It fits carboys of any size. The cradle and supporting base are made of structural steel. All members are riveted or welded.

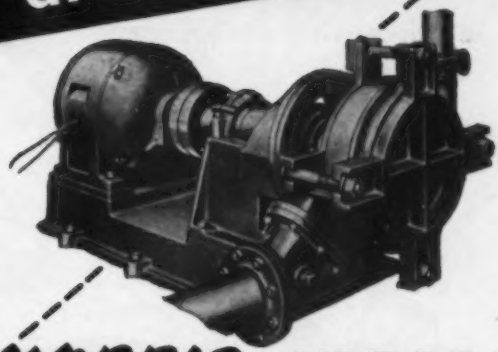
The locking device permits the carboy to be positively held at any angle for pouring so that the whole operation can be done by one man.

The new safety air-vent pouring spout insures an even flow of acid without spurts or splashes. This is made of acid-resistant rubber and plastic tubing for long wear. Flow capacity is 5 g.p.m. The long handle operates the tilter easily and permits the operator to remain at a safe distance from the acid.

The tilter can be safetly left in a position just above the flow of the acid so that it is not necessary to return the carboy each time all the way to a pouring position. Manufactured by General Scientific Equipment Co., 2700 W. Huntingden St., Philadelphia 32, Pa.



EASIER MAINTENANCE at LOWER Cost



MORRIS TYPE "R" SLURRY PUMPS

FOR CEMENT MILL USE—

The Only Pump With All These Features!

1. ***The gland is under suction pressure only.***

Unlike conventional pumps, the packing in the Morris Type "R" is under suction or positive head pressures only. It handles suction lifts with a hub sealing pressure of 2 or 3 psi. Under positive head, the pressure on the hub sealing ring need not be greater than the head at the intake.

Operation under low pressures reduces wear and tear of abrasive solids . . . practically eliminates packing troubles.

2. ***Easily dismantled by loosening four bolts.***

To remove the impeller, simply loosen four bolts, slip them out of disc slots and pull off end cover. Suction and discharge piping remains undisturbed . . . and the impeller comes out by threading it off the shaft.

Worn clearances on suction side of impeller are easily closed by tightening four adjusting screws.

3. ***Shell interchangeable for right or left hand rotation.***

Suction and discharge nozzles can be rotated around axis of pump to positions in any of the four quadrants. All together, there are 72 different nozzle locations.

4. ***No internal studs or bolts. No troublesome internal fits and joints.***

ALL THESE FEATURES MAKE THE MORRIS TYPE "R" PARTICULARLY SUITED TO CEMENT MILL USE.

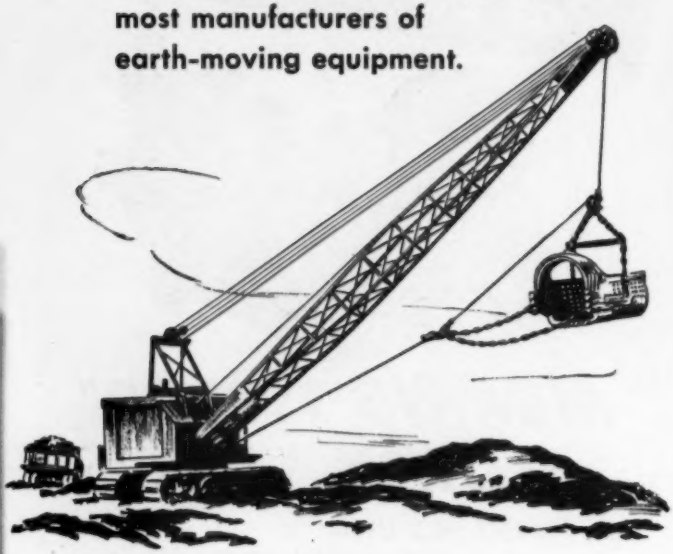
The experience of 86 years in the designing and building of pumps is at your disposal. Let our engineers help you select the exactly right pump for your particular needs. No charge or obligation.

MORRIS MACHINE WORKS, Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS Centrifugal Pumps

FIRST WITH MANUFACTURERS . . .

J-M INDUSTRIAL FRICTION MATERIALS are specified as original equipment by most manufacturers of earth-moving equipment.



FIRST WITH OPERATORS . . .

Operators who want to keep maintenance costs low *know* that JOHNS-MANVILLE FRICTION MATERIALS are easy to wear in, hard to wear out.

If Johns-Manville materials are right to *start* with . . . they must be right to *stay* with. When you order replacements, remember that Johns-Manville says "stop" and "go" to more tonnage than any other friction materials . . . see your Johns-Manville Friction Materials distributor or write Johns-Manville, Box 290, New York 16, New York.

JM

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

● Pump Units for Tractors

Athey Products Corp., 5631 W. 65th St., Chicago, Ill., has developed hydraulic pump units which are now adaptable to all makes of track-type tractors. Tractor owners will now be able to equip their machines with the Athey hydraulic

units, especially designed for use with Athey track-type earth- and rock-moving trailers.

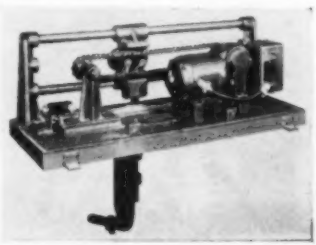
The Athey hydraulic pump unit is said to provide smooth, positive control of dumping operations, allowing the trailers to be side-dumped with a high degree of accuracy, either when stationary or while tractor and trailer are moving. The pump, tank and valve unit is built for heavy duty and long life, requiring little attention and maintenance. Controls for the hydraulic system are located near the tractor operator, ready for instant spotting of loads.

● Automatic Samplers

Hardinge Co., Inc., York, Pa., has secured manufacturing and sales rights to an accurate and rugged sampler. This device is being placed on the market as the "Hardinge Automatic Sampler."

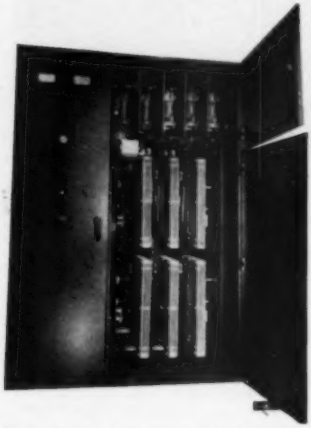
The sampler takes periodic "cuts" (or samples) from a stream of moving material, either wet or dry, at any stage in a continuous process.

The unit is entirely automatic and can be set to operate periodically at a variety of time intervals from 5 to 60 minutes. When activated by a time switch, the sample cutter moves horizontally at a constant speed across the stream of moving material, diverting a representative sample into a sampling launder or container. The cutter movement is carefully controlled to avoid stroke speed and length variation during each cutting operation.



● A-C Air-Break Starters

A high-voltage, combination fuse-type air break motor controller has been developed by Westinghouse Electric Corp. Complete motor and starter protection is claimed for these units, which may be used directly without further external protection on 3-phase, 50-60-cycle circuits capable of producing 150,000



kv.-a. at 2300 volts or 250,000 kv.-a. at 4160 volts. They can be applied with unity power factor synchronous motors rated up to 900 hp. at 2300 volts or 1500 hp. at 4160 volts, or 80 percent power factor synchronous and squirrel cage induction motors rated up to 700 hp. at 2300 volts and 1250 hp. at 4160 volts.

Basically the controller consists of a main contactor or contactors of the AH type with a thermal overload relay to provide normal starter functions, and type BAL current limiting fuses to protect the motor and starter against fault conditions exceeding the interrupting capacity of the contactor.

The new type AH, 3-pole magnetically-operated contactor was developed to provide a rugged, air break type which would give long service under severe operating conditions with the minimum of maintenance. Rated at 200 amperes, 5000 volts, it is said to have a normal life far exceeding that of the present day oil-immersed type. Together with its thermal overload relay, it reportedly protects the motor against sustained overloads, locked rotor or stalled conditions, too frequent starting, undervoltage operation and fault conditions within its interrupting capacity.

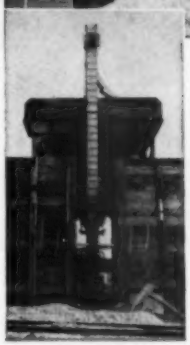
Higher fault currents which might cause damage to the starter components are quickly limited and interrupted by the type BAL fuses, which are coordinated with the controller components for a given application. The coordinated combination may be directly connected to a 3-phase, 50-60-cycle circuit capable of producing a short circuit current of 60,000 r.m.s. amperes first half cycle, including the d.-c. component, or 37,500 r.m.s. amperes on a symmetrical basis. Under maximum fault conditions the current is limited in ⅛ cycle and is completely interrupted in ½ cycle.

DESIGNED FOR EFFICIENCY

WITH

Baughman HI-SPEED

Conveying Equipment

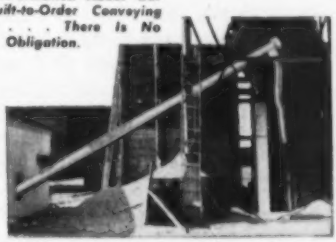


This Ready-Mix Plant gets peak capacity with Baughman *HI-SPEED* Bulk Materials Handling Equipment. Three Baughman units—the *HI-SPEED* Belt and Bucket Elevator for the elevation of sand and gravel to hoppers . . . the Auger Type Conveyor carrying cement from the building to the truck under the hopper . . . the Heavy-Duty Undertrack Unloader charging the Belt and Bucket Elevator . . . All work as a team to make a very smooth, quiet and economical operation with *HI-SPEED* performance. Baughman standardized production methods cut your equipment costs. Quality materials and expert construction minimize your maintenance expenses.

Write for Information About Our Special, Built-to-Order Conveying Equipment . . . There Is No Obligation.

MODEL 175 Belt and Bucket Elevator with Centrifugal Discharge Head

MODEL 190 Heavy-Duty Troughed Belt Undertrack Unloader



MODEL "Q" *HI-SPEED* Screw Conveyor

manufactured by

BAUGHMAN MANUFACTURING CO. Inc

879 ARCH STREET, JERSEYVILLE, ILLINOIS

trade notes

Recently appointed Minneapolis-Moline Co. industrial supervisors attended a special meeting held at the Minneapolis-Moline home office at Hopkins, Minn., May 2 through May 10, to coordinate industrial sales effort.

The meeting was arranged and conducted by Edwin A. Henry, M.M. industrial sales manager, with the assistance of E. R. Raveling and Rex Jeide.

To get the proceedings under way, Minneapolis-Moline president and general manager, W. C. Mac Farlane, extended his welcome and presented the M.M. industrial manufacturing outlook and the estimated volume of sales expected for the current year.

• Roy Smallwood, sales manager, and L. H. Lull, president of Lull Mfg. Co.

Cooperation of allied manufacturers was excellent. Companies whose representatives demonstrated their equipment included Allen Industrial Products, Battle Creek, Mich. (tractor cabs.); American Hoist and Derrick Co., St. Paul, Minn. (tractor winch); Davenport Besler Corp., Davenport, Ia. (tractor snow plow); Henry Manufacturing Co., Inc., Topeka, Kan. (hydraulic scrapers and dozers); Little Giant Products, Inc., Peoria, Ill. (rotary brooms); Ottawa Steel Products, Inc., Ottawa, Kan. (hydraulic front end loaders); and Reese Engineering Co., Los Angeles, Cal. (hydraulic front end loaders).

The program included visits to the Lull Manufacturing Co. at Minneapolis and to the M.M. automotive plant.

C. W. Spigener is located at Memphis, Tenn., and will serve the M.M. industrial dealers in the Tennessee, Kentucky, Missouri, Arkansas, Louisiana and Mississippi area.

Frank Hughes, Hopkins, Minn., will serve the M.M. industrial dealers in the Minnesota, Wisconsin, Iowa and South Dakota area.

O. W. Walters, Peoria, Ill., will serve the Illinois, Missouri, Indiana and Iowa area.

M. E. Carroll, Columbus, O., will serve the Michigan, Indiana and Kentucky area.

Robert Moore, Dallas, Tex., will serve Texas and Louisiana area.

Ed Titus, Kansas City, Kan., will serve the Kansas, Missouri, Texas and New Mexico area.

E. W. Anderson, Great Falls, Mont., will serve the Montana and Wyoming area.

O. A. Nelson, Fargo, N. D., will serve Minnesota and North Dakota area.

C. A. Brogle, Denver, Colo., will serve the Colorado and Wyoming area.

W. H. Pratt, Omaha, Neb., will serve Nebraska, Kansas, South Dakota and Iowa area.

Yes, sir! conveying costs really took a beating the day a Cincinnati Conveyor Belt took over at this plant. That was back in 1940, and that husky, stick-to-the-job Cincinnati Belt is still moving big sand and gravel tonnage. More proof of Cincinnati's 3 big advantages: MORE TONNAGE CONVEYED . . . MORE YEARS OF SERVICE . . . LOWER BELT COST PER TON CONVEYED. Write for full information.

THE CINCINNATI RUBBER MFG. CO.
CINCINNATI 12, OHIO

CINCINNATI CONVEYOR BELTS

Also attending the meeting were Thomas Vaughn, manager of the Reed Hardware & Implement Co., Minneapolis-Moline distributors in Idaho Falls, Ida., and W. L. (Bill) Fibben, assistant sales manager of Frick Company, Minneapolis-Moline distributors in Waynesboro, Pa.

At its recent board meeting, directors of Walsh Refractories Corp., 101 Ferry St., St. Louis, promoted James L. Crawford, former vice-president and general manager to the presidency of the concern. N. S. C. Walsh, retiring president, was named honorary chairman of the board.

M. S. Pohler

Appointment of Milton S. Pohler as district manager in charge of the Birmingham, Ala., office has been announced by the Marion Power Shovel Co. of Marion, O. Mr. Pohler succeeds the late R. P. "Bob" Thompson as Birmingham representative. He will maintain headquarters in Birmingham.

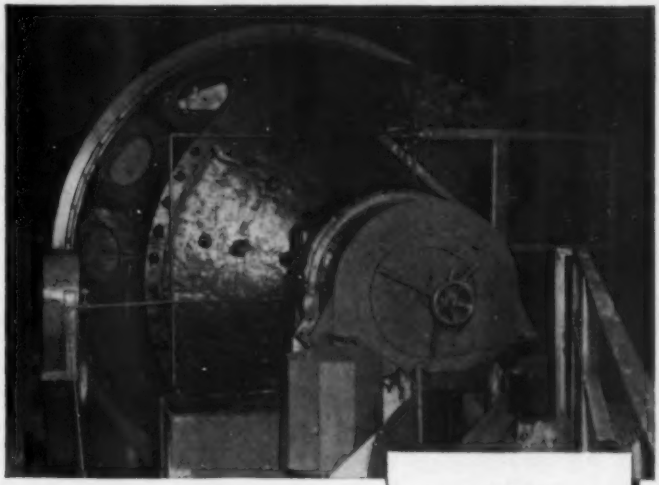
Organization changes in the Truck Division of GMC Truck & Coach are announced by J. E. Johnson, general sales manager, as follows: R. C. Woodhouse, formerly GMC regional manager for the Southwest, is promoted to the position of assistant general sales manager of the Truck Division at Pontiac. R. E. Holsaple, formerly zone manager for GMC in Charlotte, N. C., is promoted to metropolitan sales manager in charge of GMC's four retail operations in Chicago. He is succeeded by G. R. Blackburn who, for the past few years, has headed the sales organization and analysis department at the GMC factory in Pontiac. A. B. Campbell, formerly Mr. Blackburn's assistant, will succeed him and head up this department. W. P. Smith becomes retail store manager for GMC in Cleveland, taking over this position from Glenn G. Bennett who has resigned to take a GMC dealership in Phoenix, Ariz.

Chain Belt Co. of Milwaukee announces the appointment of the Watkins-Aldridge Equipment Company, Ltd., S. State st., Jackson, Miss., as distributors of the complete line of Rex Construction Machinery in the state of Mississippi south of and including the counties of Bolivar, Sunflower, Tallahatchie, Grenada, Webster, Clay and Lowndes.

Marion Power Shovel Co. of Marion, O., has announced the appointment of W. D. Calland as sales representative for eastern Missouri and the southwestern section of Illinois. Mr. Calland will maintain headquarters at 411 North 7th Street, Suite 713, St. Louis, Mo.

The thinner the mill lining, the greater the diameter

...AND THE OUTPUT



You can increase the output of your mill by installing U·S·S Lorain Rolled Plate Linings. The high strength of the rolled steel used in Lorain Linings allows you to install thinner plates, thereby increasing the diameter of the mill—and boosting the output.

U·S·S Lorain Rolled Plate Linings are easy to install and economical to maintain.

Plates are cut and shaped to precise dimensions and, combined with accurate rolled lift bars, offer close fit which eliminates openings and prevents washing of shell. Lift bars when worn out may be readily replaced with new bars. In cases of pronounced wear at feed end, liner plates, being symmetrical, may have their position reversed in each row prior to renewal of lift bars. This adds life to the lining, reduces cost. U·S·S Lorain Rolled Plate Linings are available through leading mill manufacturers whose names will be furnished upon request.

This photograph shows how Lorain lift bars clamp over edge of plates with shank of bar extending between plates.

...And for Added Economy, Greater Efficiency, Specify U·S·S Grinding Balls

U·S·S Grinding Balls—forged from special analysis steel which has been rolled to specifications determined by your requirements—are accurately heat-treated to take the punishment of abrasion and impact throughout the longest, heaviest runs. U·S·S Grinding Balls meet the most exacting specifications of hardness, toughness, soundness. Standard sizes are available from ¾" to 5" in diameter.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK
9-189

USS

LORAIN ROLLED PLATE LININGS AND GRINDING BALLS

UNITED STATES STEEL

Dr. Howard E. Fritz, vice-president for research of The B. F. Goodrich Company, has been named 1949 winner of the Lamme Medal of Ohio State university. The award is made yearly to a graduate of an Ohio State technical department for "meritorious service in engineering of the technical arts."

Following the recent death of L. G. Stelzle, former president, Walter Motor Truck Co., Queens, L. I., N. Y., has announced that Clinton A. Misson has been named president and director. Maurice Walter continues as vice-president and has been elected chairman of the board of directors.

Chain Belt Company of Milwaukee, manufacturers of chain and transmission, conveying and process equipment announces the appointment of Charles Pingry as district sales engineer at Dallas, Tex.

A number of territory and field assignment changes were effected April 1 by the Detroit Diesel Engine Division, General Motors Corporation.

A. E. Bosetti has been appointed sales engineer in the New York-New England zone. Paul Merkert takes over as sales engineer in the territory defined by Indiana, Illinois, Missouri, Kansas and the southeastern border counties of Iowa. Lauren H. Wells, formerly zone sales engineer covering West Coast distributors, will be responsible for sales to manufacturers in the Midwestern states not covered in Mr. Merkert's assignment.

Paul Merkert

A. E. Bosetti

R. V. Baxley, assistant to E. F. Bentley, manager of contractors equipment sales, is handling a field sales assignment in Ohio and Michigan's southern peninsula for the remainder of 1949.

L. H. Wells

R. V. Baxley

Glenn E. Martin has been named advertising manager of the Replacement Tire Sales Division of The B. F. Goodrich Company, responsible for all national and retail advertising and sales promotion on B. F. Goodrich brand tires.

• LeTourneau personnel view the Certificate of Merit Award recently awarded the firm for its prize-winning advertising in the Seventh Annual Business Paper Award Competition. This was the seventh award won by LeTourneau in the competition. Standing are Joe Serkowich, assistant advertising manager, and Eugene E. Weyeneth, advertising manager; seated, Roy E. McCluskey, vice-president and general manager.

SYNTRON

Speeds Up Bulk Material Handling!

"Vibra-Flow"

VIBRATORY FEEDERS

—with capacities of up to Hundreds of Tons per hour of various materials—hot or cold—dry or damp—from fine powders to big abrasive lumps.

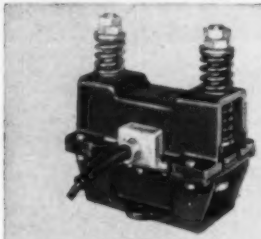
—at instantly controllable rates—just turning a rheostat or reactor dial gives a range of feed, from a trickling dribble to a gushing torrent.

—to grinders, crushers, dryers, belt conveyors, etc.

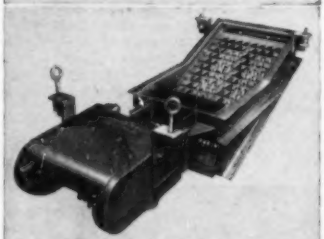
Catalog literature available.

SYNTRON CO.

385 Carson Homer City, Pa.

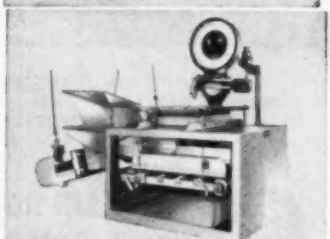


BIN VIBRATORS
Make Stubborn Materials Flow Freely

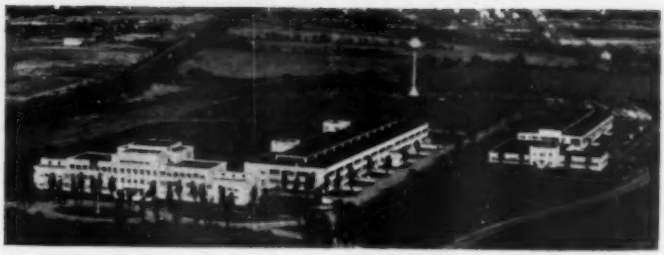


VIBRATING SCREENS
Wet or Dry — Single or Multiple Decks

VIBRATING GRIZZLIES
Both Feed and Scalp With One Unit



"CONSTANT WEIGH" FEEDERS
Accurate, Continuous Feed by Weight



• The Johns-Manville Research Center, Manville, N. J.

Governor Alfred E. Driscoll dedicated the new Johns-Manville Research Center at Manville, N. J., on May 24 "to service through science for better homes and greater industrial efficiency" and pointed out that New Jersey has become "the world center of industrial research."

Lewis H. Brown, chairman of the board, Johns-Manville Corporation, in responding to the governor's dedication address, said, "Johns-Manville research has long been known for scientific accomplishment in the control of heat, cold, sound and motion and protection against fire, weather and wear.

"With the dedication of its new Research Center," he stated, "the company has entered a new era of expanded service to homes and industry."

Visitors inspected the four buildings of the Johns-Manville Research Center, located on a 93-acre tract on the Raritan River, about 40 miles from New York. In the course of the inspection, they saw research scientists at work on the more than 400 lines of Johns-Manville building and industrial products which affect the lives of nearly every one. In the Center research activities are devoted to the improvement of existing Johns-Manville products and to the development of new products to meet new needs and demands of industry and home owners and builders.

Described as the largest laboratory facilities in the world devoted to research and development of building materials, insulations and allied industrial products, the Research Center embodies a completely new concept of industrial laboratory design and construction. This includes laboratories with relocatable walls and built-in services that make them as flexible as movie sets, as well as product development areas including as many as 10 pilot plants under one roof in close proximity to the laboratories associated with their products. This arrangement permits close cooperation of scientist-technician "teams" or "task forces" from idea to commercial production.

Construction of the group of buildings comprising the Johns-Manville Research Center was started in 1945 as one of the projects in a company-wide $60,000,000 post-war program of expansion, cost reduction, replacement and improvement.

It is estimated that this program has raised the productive capacity of the company, in physical terms, about 35 percent over what could have been handled in the peak war year of 1942.

The Research Center construction project is under the supervision of the Johns-Manville General Engineering Department, headed by K. W. Huffine, vice-president and director of engineering. G. S. Smith is chief engineer in charge of Johns-Manville expansion program construction, and M. B. Jamin is the project engineer. All are long-time members of the Johns-Manville organization.

Russell C. Westover Jr. became president of the Ray Oil Burner Co. of San Francisco as of May 16, 1949. He succeeds Mrs. R. C. Ray, who is retiring from the active management although remaining as a director of the company. Mr. Westover has long been identified with the Ray Company as a director and business adviser. Plans are already beyond the formative stage for the expansion of the company's distributor organization and the introduction of newly-perfected engineering developments.

EASY MANEUVERABILITY—RUGGED DEPENDABILITY

MM MINNEAPOLIS-MOLINE MODERN MACHINERY

INDUSTRIAL WHEELERS

Get More Work Done Per Hour.....

When you want to speed the job—do it with MM Industrial Wheelers. Operators of ready-mix concrete plants report loading 70-80 tons of gravel per hour with MM Industrial Wheelers on average hauls of 100 feet from stockpile to hopper.

Investigate these advanced-design features that assure you dependability on rugged jobs!

- Shuttle Gear for 6 forward and 6 reverse speeds up to 14.5 m.p.h.
- "Roller Spin Steering" has roller and needle bearings from steering wheel to ground.
- RTI high-compression valve-in-head engine with 150 fewer wearing parts.
- Extra strong heavy-duty clutches.
- Heavy cast front-wheel centers and fabricated H-type front axle.
- High turbulence combustion chambers and regulated cooling for extra power output.

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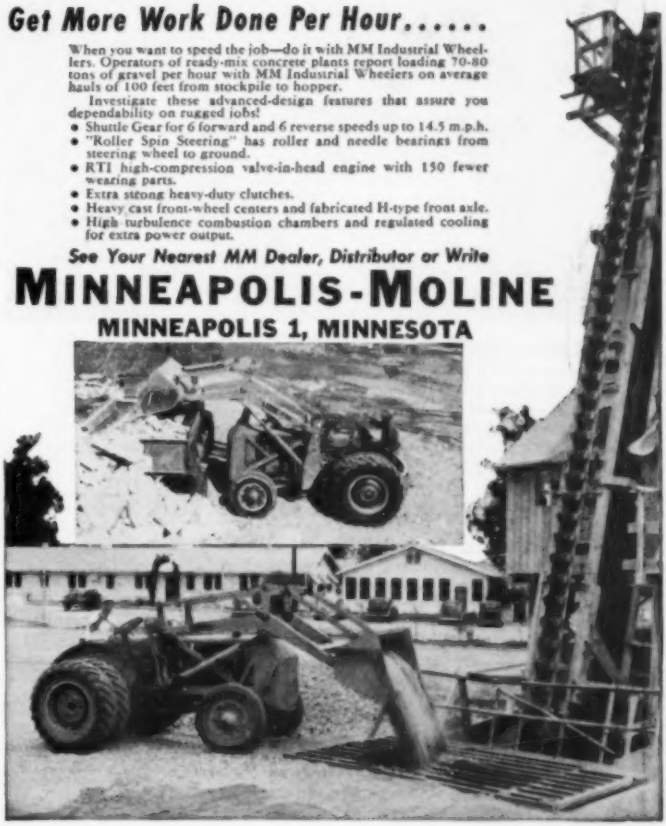


Realignment and expansion of the general sales department and the expansion of the advertising department involved promotions for nine persons in the general sales department at the Caterpillar Tractor Co. and the creation of two new divisions within that department.

In the new sales structure H. H. Howard, general sales manager, assumes the title of director of sales, with J. J. Valentine and J. H. Mohler as assistant directors. Mr. Valentine, heretofore assistant general sales manager, will have administration of Eastern, Central, Western and Governmental sales divisions. Mr. Mohler, formerly manager of sales training division, will now administer sales development division and sales training division, along with two newly-created divisions, sales engineering and market research. W. N. Foster, assistant Eastern Division sales manager, becomes manager of the new sales engineering division.

J. J. Valentine

H. H. Howard

J. H. Mohler

W. N. Foster

K. F. Ames will succeed Mr. Mohler as sales training division manager and will be succeeded as assistant manager of Central sales division by J. M. Abbey, formerly a district representative of the central division. Mr. Foster will be succeeded as assistant Eastern division sales manager by C. K. McClelland, formerly a district representative in the Central division.

The New Holland Machine Division of the Sperry Corporation has announced that its plant at New Holland, Pa., will be closed for a general vacation period from July 29 until August 15. Shipments of material should not be scheduled to arrive at this plant during the vacation period.

The firm's Lancaster plant will continue operations throughout the two-week interlude.

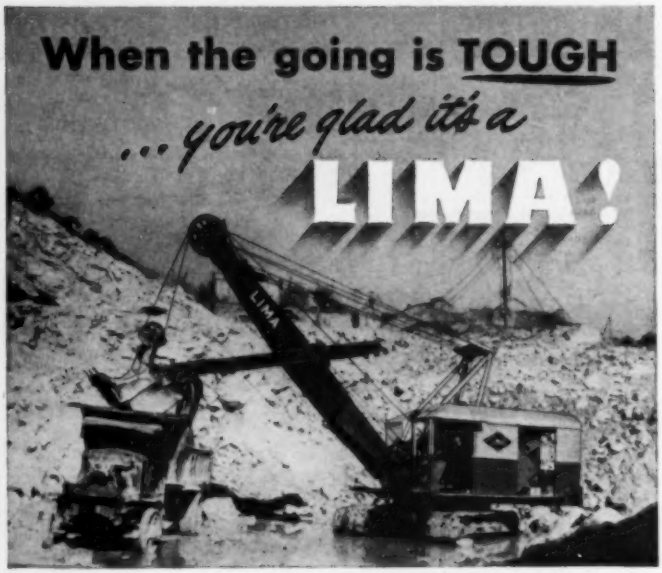
Eugene Caldwell, vice-president and general manager of the Hyster Company, manufacturers of industrial trucks and tractor equipment in Portland, Oregon, announces two personnel changes, effective June 1.

Theron Howard

J. F. Lewis

Theron Howard, head of tractor sales and service in the eastern division of the company since 1941, will become manager of the Peoria, Ill., plant. J. F. Lewis, formerly in charge of production and purchasing at the Peoria plant, is being transferred to Portland to assume the duties of chief production engineer.

Chain Belt Company of Milwaukee, manufacturers of chain and transmission, conveying and processing equipment announce the appointment of Charles Moeller as district sales engineer to the Kansas City Office. He has been with the factory organization for almost two years and is a graduate of the Rex Student Engineering Training Program.



This LIMA Type 802 Shovel excavating limestone in a South Carolina quarry is a perfect example of the application of correct equipment to a job. This rugged 2 yard machine is a favorite among quarry operators because of its inherent stamina, its maximum output with minimum weight, its ease of operation with air-control of all major motions, its anti-friction bearings, and its simple, quick convertability to crane or dragline.

LIMA Equipment STAYS ON THE JOB!

Down-time of excavators in a quarry invariably means tying up other expensive equipment and manpower. A Lima user recently wrote us: "We used our machine on a double-shift basis for over a year and have had no delay whatsoever other than a negligible delay caused by a loose fan belt." Records like this are the reason why alert quarry operators insist on LIMA equipment.

The Lima line includes Shovels ¼ to 6 yards, Cranes 13 to 110 tons and Draglines variable. Write for description bulletins.

Lima Shovel and Crane Division LIMA HAMILTON CORPORATION
LIMA, OHIO
OTHER DIVISIONS: Lima Locomotive Works Division; Milwaukee Tool Works Co.; Hamilton, Ohio; Rockchiller Co.

The appointment of John E. Carroll as general sales manager for the American Hoist and Derrick Company, St. Paul, Minn., was recently announced.

J. E. Carroll

Mr. Carroll was for some time associated with American in a sales capacity, but in intervening years was a partner in the firm of Harron, Rickard and McCone of southern California, as head of its construction equipment division.

Effective June 1, the Vibro-Plus Corp. changed its name to Vibro-Plus Products, Inc., and will move its offices and shops to 54-11 Queens Boulevard, Woodside, Long Island, N. Y. Vibro-Plus Products, Inc., will carry a full line of Vibro-Plus equipment.

Curtis C. Gary has been appointed assistant to the president of the Brake Shoe & Castings Division of American Brake Shoe Company. He will continue to be located at headquarters in New York City.

The Acme Equipment Co. 14057 Schaefer Highway, Detroit, Mich., has been appointed Detroit representative of the Ohio Locomotive Crane Co. of Bucyrus, O.

John F. Ducey Jr. and Sam R. Watkins have been appointed district sales managers of the Brake Shoe & Castings Division of American Brake Shoe Company.

Appointment of F. M. Urban as sales manager of engineered rubber products and H. Leon Moran as factory manager, Fort Wayne plant, United States Rubber Company, has been announced.

The Hall-Scott Motor Division of ACF-Brill Motors Co. announces the appointment of Fred Cushing as Eastern sales manager, with headquarters at Philadelphia, Pa. Mr. Cushing will supervise Hall-Scott Engine activities East of the Rocky Mountains and work with the varied users of Hall-Scott engines in industrial service, power stations, truck and special equipment.

One of the problems perpetually facing contractors who operate large fleets of mechanized equipment is that of maintaining a staff of skilled service personnel.

Recognition of this industry-wide need prompted the Detroit Diesel Engine Division to develop a "Mobile Training Unit" for instructing owners and operators of General Motors Series 71 diesel engines.

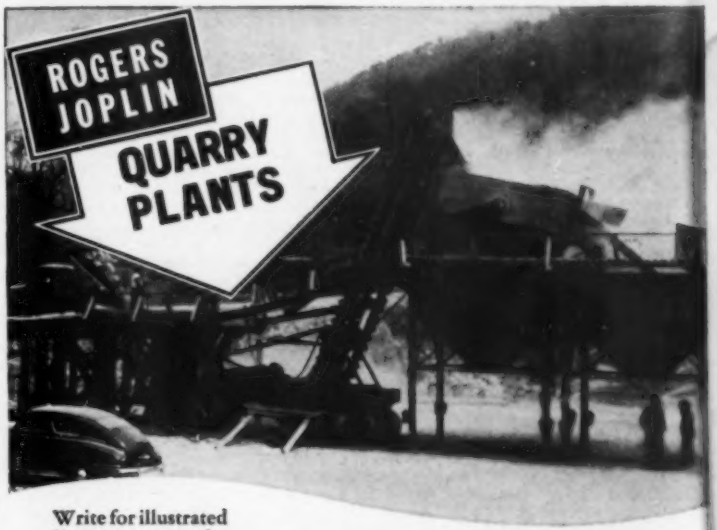
Detroit Diesel has achieved a complete service training facility that backs right up to the door and in a matter of minutes is ready to put on a thorough course in specialized diesel engine machanics. The whole package is contained in a smartly designed GMC 2-ton cab-over-engine truck. Its classroom equipment includes such items as a cutaway model of a 3-cylinder GM Series 71 diesel, a fully-equipped standard engine, monometer testing apparatus, cutaway sections of principal sub-assemblies, charts, movies, slides and many other pieces. In fact, every necessary training aid used in the conduct of modern and effective instruction work has been provided for.

The appointment of Robert L. Baldwin as assistant to G. A. Wallerstedt, Western District manager for Hardinge Company, Inc., has been announced. Mr. Baldwin will assist in sales development, using the Hardinge office at 24 California Street in San Francisco as headquarters.

Appointment of the Mine Service Company of Lothair, Ky., as an exclusive Hewitt Rubber Division distributor in the counties of Perry, Letcher, Knott and Leslie, Kentucky, has been announced by J. H. Hayden, vice-president in charge of sales of Hewitt-Robins Inc. The company will also represent Robins Conveyors Division.

Mack Trucks, Inc., has announced that L. G. Bissell and C. T. Ruhf have relinquished their respective positions as chairman of the board and president and that the board of directors has elected E. D. Bransome to both offices. Mr. Bransome has been a director of the company for the last five years.

Messrs. Bissell and Ruhf will continue as members of the Mack Board, Mr. Ruhf remaining with the company in a consulting capacity.



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Designed with inherent ROGERS-JOPLIN reliability.

ROGERS IRON WORKS CO.

JOPLIN, MISSOURI

Miller, Bradford and Risberg, Inc., 203 N. Dewey St., Eau Claire, Wis., has been appointed distributor for the New Holland Manufacturing Co. of Mountville, Pa. The firm will distribute New Holland pit and quarry equipment in eastern Wisconsin and the northern peninsula of Michigan.

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Recently a reader wrote, as follows: "We are a quarry company and made a contract with a farm owner which gives us the sole right to all 'minerals' in and on the land. We intended to have the sole right to quarry rock. Soon after we signed the contract and paid the farm owner $6,500 he died. We started operations to quarry the stone by installing machinery, etc. The heirs of the deceased farm owner filed a suit to prevent us from taking any stone or rock from the land claiming that the word 'minerals' in the contract does *not* include stone and rock. What in your opinion is our chance to win this suit? Also, please assist our lawyer by giving us new higher court decisions which explain whether sand, gravel, rock and stone are minerals."

First, it is important to explain that the scientific or technical definition of "minerals" is so broad as to embrace not only metallic minerals, oil, gas, stone, sand, gravel and many other substances, but even the soil itself. See Beury v. Shelton, 151 Va. 28; Northern Pacific v. Soderberg, 188 U. S. 526; Kinder v. La Salle, 310 Ill. 126; and Rudd v. Hayden, 265 Ky. 495. Also, if this company's counsel can convince a jury that the *original intentions* of the farm owner, when he signed the contract, was to grant or give the quarry company the right to quarry stone and rock from the land, the company will win the suit. This is so because ambiguous clauses in contracts, deed and other written instruments *always* are construed by the higher courts *in accordance* with the meaning intended by the parties.

Since this farm owner is dead and cannot testify as to whether he *intended* for the company to quarry stone and rock from the land, the court must decide whether the legal meaning of the term "minerals" includes stone and rock in and on the land. All higher courts agree that the word "mineral" or "minerals" used in contracts, conveyances and wills are to be understood as used in their *ordinary* and *natural meaning* unless there is a clear indication that they are intended to have a more or a less extended signification.

Hence while the scientific or technical definition of "minerals" *includes* sand, gravel, stone and rock, yet *unless* a contract, deed or will contains a clause *stating* that the word "minerals" *shall be construed* and interpreted in a scientific or technical tense, the ordinary and natural meaning of the words will be given. See Travers v. Reinhardt, 205 U. S. 423; Northern Trust Company v. Wheeler, 345 Ill. 182; and West v. Glisson, Tex. Civ. App., 184 S. W. 1042.

And again a late higher court decided that while *ordinary* sand, gravel, stone and rock is *not* included in the term minerals, yet if this material *has special or unusual* value it is, legally, a mineral. Otherwise it is *not* a mineral.

For example, in Heinatz v. Allen, 217 S. W. (2d) 994, reported May, 1949, the testimony showed facts, as follows: The owner of 400 acres of land made a will and devised to her daughter "the surface rights exclusive of the mineral rights" and she devised to another company "the mineral rights."

In subsequent litigation the higher court held that the company could *not* remove sand, gravel, rock or stone from the land, and said:

"The controlling question is whether commercial limestone is included in the devise of 'the mineral rights' in the tract of land . . . In our opinion substances such as sand, gravel and limestone are not minerals within the ordinary and natural meaning of the word unless they are rare and exceptional in character or possess a peculiar property giving them special value . . . The limestone here involved is technically or scientifically a mineral, and the same is true of sand and gravel. The physical characteristics and the elements of limestone, sand and gravel are in great part the same. Limestone, sand and gravel are removed by quarrying, resulting in the virtual destruction of the surface. We believe that a decision in this case that the limestone is included in the devise of 'the mineral rights' would be inconsistent."

For comparison, Waring, 89 Pac. 565, 10 L.R.A.N.S. 1163. This court held that the word or term "minerals" *included* sand that is *valuable* for making glass and also limestone of such quality that it may profitably be manufactured into cement. This court explained that these substances, when they are useful *only* for building and road-making purposes, are *not* regarded as "minerals" in the ordinary and generally accepted meaning of the word.

In Rudd v. Hayden, 265 Ky. 495. Here a deed conveyed "all minerals, coal, clays, spars, oilgases and every kind and character of mineral cement, oil, gases, etc. not included in the above general description . . . . together with the exclusive right to mine same . . . ".

The court held that by reason of the use of the word cement in the deed the grantor *intended* to convey limestone from which cement might be manufactured. In so holding the court expressed the opinion that the use of the term "minerals," without more, would not show an intention to convey limestone, adding that limestone is not mineral within the ordinary and popular sense of the word.

And again in Campbell v. Tennessee Iron Company, 150 Tenn. 423, a contract was litigated which contained a clause that a corporation had right to enter land to explore for mines or mineral, with the right to make excavation, to erect machinery for the purpose of manufacturing "such minerals as may be found on or contiguous to said land."

The land consisted of a limestone bluff which was valuable for quarrying and manufacturing into fertilizer.

The court held that the contract did *not* give the right to the corporation to excavate the limestone.

And again in Beury v. Shelton, 151 Va. 28, it was shown that a deed contained a clause that the grantor or seller of the land had the right to "all the

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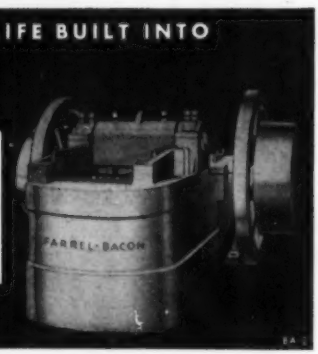
Permanent strength and operating efficiency is engineered into these crushers at every vital point. Farrel-Bacon will provide industrial units or completely designed and equipped plants, including screens, elevators and conveyors. Also other types of mine, quarry, sand and gravel plant machinery. *Write for complete information.*



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metals and minerals of every kind and character whatsoever in and underlying" the land, with the right "to excavate therein and thereon for such metals and minerals" and the right "to mine, dig and remove" all such metals and minerals from the land.

This higher court held that the deed did not give to the grantor the right to excavate and remove ordinary stone and rock from the land.

Cannot Enlarge Scope

According to a recent higher court a state's commission cannot enlarge the scope of its order, rule or regulation after a full public hearing on the question of freight rates.

For example, in Atchison, T. & S. F. Ry. Company v. State Corporation commission, 203 Pac. (2d) 211, it was shown that the State Corporation commission in Kansas instituted a legal proceeding respecting freight rates on cement from producing points in Kansas. Later the commission issued an order much wider in its scope than the former so as to apply to shipments from points of origin in Kansas. The higher court held that the order was invalid on its face. The court said:

"We think it clear that when the commission institutes a hearing respecting freight rates on cement from producing points in Kansas, and after a full hearing upon that question makes an order much wider in its scope so as to apply to shipments from points of origin in Kansas, the order is invalid."

Partner Died

Recently a higher court laid down a very important law relating to partnerships. This court held that a partnership is *automatically* dissolved by death of one of the partners, even though the business continues to function as usual. Therefore, the dependents of a partner who died were held *not* responsible for debts or losses of the partnership business *after* death of the partner.

For example, in Harvey v. Harvey, 203 Pac. (2d) 112, it was shown that a partnership was engaged in the business of selling rock, gravel and concrete mix to contractors. One of the partners died. The question presented to the court was: Are the dependents of the deceased partner liable for bad business deals and financial losses incurred by the partnership after death? The higher court held in the negative, saying:

"A partnership is automatically dissolved by the death of one of the partners . . . The interest of deceased partner's estate in the partnership business was fixed as of date of partner's death and losses thereafter sustained by the partnership were *not* chargeable to the estate."

Conditional Permit Held Valid

Considerable discussion has arisen from time to time over the legal question: Can municipal officials, or a city council, award a permit to excavate rock, sand and gravel in a residential zone? The answer is yes if the officials or council do not violate any law or arbitrarily grant the permit.

For example, in Wheeler v. Gregg, 203 Pac. (2d) 37, it was shown that an

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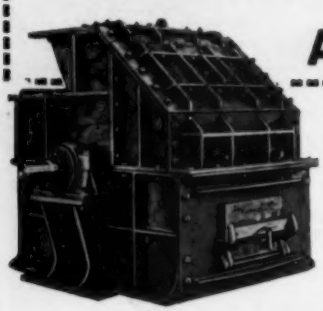

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For better agstone sizing, American ACS Hammermills are designed with a special *center feed*—to lengthen the travel of stone and give a higher ratio of fines. With the conventional front feed, minimum fines are assured. Easy external adjustments give the individual size control and flexibility to meet your changing market needs.

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CORE DRILLING MACHINES
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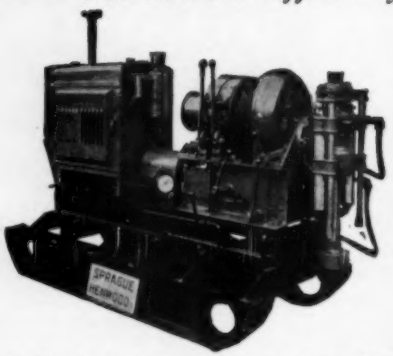

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These high-speed, sturdy units back up the drill bit with ample, sustained, economical power.

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Drill Down Fast
with
S & H
Bortz DIAMOND BITS

area in a city was zoned for residential use, and several applications for permission to excavate rock aggregates in this community area had been denied by the city. Nevertheless the city officials granted to a company a "conditional use permit" to excavate for commercial production of rock, sand, and gravel in this area. Several nearby property owners filed suit and asked the court to grant an injunction to prevent the company from starting excavations and operations. These persons testified that they would not have purchased or improved their homes and properties had they known there was any probability of permission being granted to excavate rock, sand and gravel within this area. The higher court refused to grant an injunction and said:

"The judgment of city council that the owner of realty in the city was entitled to a conditional use permit to excavate for commercial production of rock, sand, and gravel, should be final *unless* it clearly appears to be arbitrary or contrary to the law."

Defective Construction

All higher courts hold that a contractor who makes a contract to construct, alter or repair a building is responsible for damage to a building caused by negligence of the employees.

In Martin v. Westover Corporation, S. W. (2d) 198, it was shown that a building was destroyed by fire.

In the subsequent suit the property owner proved that the negligence of the contractor's employees caused the building to catch fire.

The higher court indicated that the contractor must pay the property owner the full damages and value of the building destroyed by fire.

As Is Contract

Modern higher courts consistently hold that a purchaser who purchases used machinery under a contract containing an "as is" clause must pay the full contract price irrespective of the poor or defective condition of the machinery. The same law is applicable to one who "takes over" the purchaser's contract.

For example, in Dreyer-Whitehead & Goedecke, Inc. v. Land, 216 S. W. (2d) 413, the testimony showed facts, as follows: A seller sold to one Long a second hand Caterpillar Diesel bulldozer for the sum of $3,500. A written contract was executed which stipulated, among other things: "Bulldozer is sold 'as is' and 'whereis' with no guarantee or warrantee implied, spoken or written of any kind." Long failed to make agreed payments and while still using the bulldozer in the construction and excavation business, the seller induced his partner to "take over" Long's contract. This was done and in the contract between the seller and Long's partner the original contract between the seller and Long was referred to. After the partner had used the bulldozer for a few days he discovered that it had defects and refused to make further payments claiming that the seller had verbally guaranteed that the bulldozer was in good mechanical condition.

In subsequent litigation the higher

court held that the partner must pay the seller the full contract price and said:

"He (partner) was acquiring title to the same machinery, for the same price, and undertook to pay the obligation under the identical terms set out in Long's mortgage. He could not accept the benefits of this contract without assuming its unfavorable incidents. Under the original terms of sale, all warranties were expressly excluded."

Land Owner Orders Gravel

Considerable discussion has arisen from time to time over the legal question: If an agent orders another to perform work and supply materials for his principal, can the agent be compelled to personally pay the bill if his principal refuses to pay? The answer is yes if the owner who performed the work did *not know* that the agent was representing his principal.

For illustration, in Spencer v. Jones, 217 S. W. (2d) 267, the testimony showed facts, as follows: One Spencer owned a tract of land. He laid out lots and blocks, with necessary streets and alleys and purchased gravel and then notified a truck owner named Jones to haul and dump it on the streets and alleys in the subdivision. Later Spencer refused to pay Jones claiming that the city council had agreed to pay Spencer. Since the city refused to pay the bill the higher court ordered Spencer to pay Jones for full services rendered.

Must Prove Cause

According to a recent higher court an employee who has silicosis cannot receive compensation from his present employer unless he *proves* that he contracted the disease while working for this employer. This rule of law is not changed although the testimony shows that the employer violated a state law designed to safeguard employees from this disease.

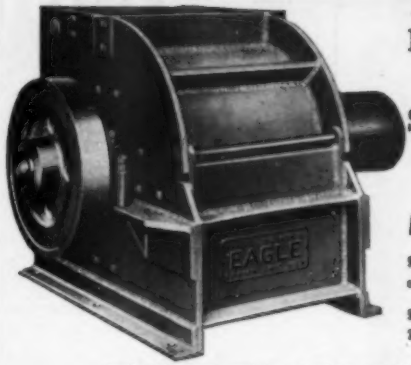
For example, in Phelps Dodge Corporation v. Ford, 203 Pac. (2d) 633, it was shown that a state law was enacted which specified the minimum percentage of silicon dioxide or asbestos dust that employers may subject employees.

In subsequent litigation the higher court refused to award compensation to an employee who contracted silicosis and whose duties for 28 years had been acting as a watchman at the surface yard gates of asbestos mines.

The higher court held that although the employer may have violated the above cited law by failing to provide efficient ventilating fans yet without definite proof that the employee had contracted silicosis *as a result* of the employer's failure to comply with the law, he could *not* recover compensation under the State Workmen's Compensation Act. The court said:

"There is nothing in the evidence to indicate that there was present in the area where claimant (employee) worked for the past twenty-eight years silicon dioxide dust in harmful quantities or that his exposure thereto was such that others would not have been equally exposed outside such employment especially when working as a watchman at the yard gates."

OUTPUT...RESULTS



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Screen spacers from 1/16" to 2".

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Continuous, economical kiln production is assured when PYRASTEEL Kiln Ends are on the job — no more burnouts and costly shutdowns!

PYRASTEEL protection is needed at both the feed end and discharge end of the kiln . . . and the segmental sections are easy to install at these points.

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PYRASTEEL is especially effective in all high-heat applications up to 2000° F., such as feed pipes, clinker coolers, conveyor screws, and drag chains.

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Docket 86939 (2)—Proposed to establish on sand, all kinds and gravel, in open top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Gnadenhutten, O. to Steubenville, O. 136; Toronto, O. 143 cents net ton.

Docket 86944 (2)—Establish on limestone, agricultural (unburnt) in box cars, carload minimum weight 50,000 pounds from Carey, O. to Chardon, O. 239 cents net ton.

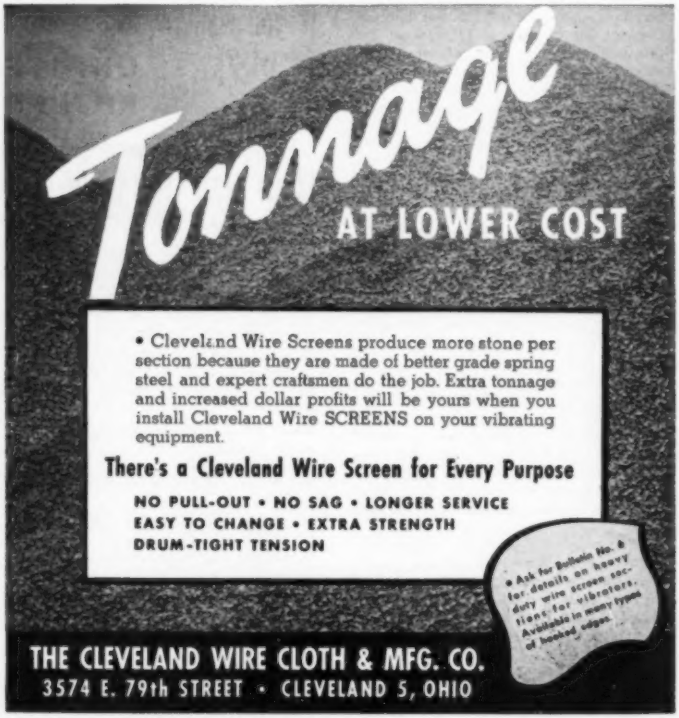
Docket 86949 (2)—Proposed to establish on sand and gravel, carload minimum weight 90 percent of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply from Sargents, O. to Stepstone, Ky., 199 cents; Wichester, Ky., 210 cents net ton.

Docket 86954 (1)—Proposed to establish on stone, crushed, in bulk, in open top cars, carload minimum weight 90 percent of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply from Holland, O. to Addison Junction, Clarks Lake, Mich., Rollin, Michigan, 155 cents; Hudson, Prattville, Mich., 150 cents. Waldron, Mich., 144 cents net ton.

Docket 86955 (1)—Stone, crushed, in bulk, in open top cars, carload minimum weight 90 percent of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply from West Columbus, O., to Springfield, O., 85 cents per net ton.

Docket 86961 (1)—Proposed to establish on stone, crushed, in bulk, in open top cars, carload minimum weight 90 percent of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply from Russellville, Ind., to Springfield, Ill., 142 cents per net ton.

Docket 86962 (1)—Proposed to establish on stone, crushed, in bulk in open top cars, carload minimum weight 90 percent of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply from Fin-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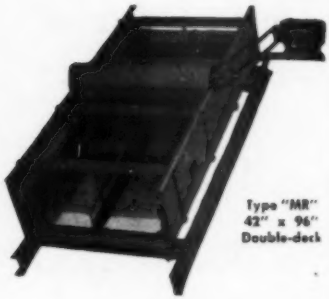

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dlay, O., to Clinton and Tecumseh, Mich., 155 cents net ton.

Docket 86993 (1)—Establish on crushed stone, carload, as described in Rule 20, IC Railroad Tariff 13321-I, minimum weight 90 percent of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight applies, from Ullin, Ill., to Loogootee, Ind., 199 cents; Shoals, Ind., 205 cents net ton.

Docket 86997 (1)—Establish on sand and gravel, carload minimum weight 90 percent of marked capacity of car, from Terre Haute, Ind., to Black Hawk, Coalmont, Keller, Lewis and Linton, Ind., 71 cents net ton, subject to expiration date of December 31, 1949.

Docket 87000 (1)—Establish on stone, crushed, in bulk, in open top cars, carload minimum weight 90 percent of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply from Findlay, O., to the following points: Adrian, Mich., Lenawee Jct., Mich., $1.50 per net ton; Allen, Mich., $1.72; Cadmus, Mich., $1.55; LaSalle, Mich., Vienna, Mich., Ottawa Lake, Mich., $1.44; Sturgis, Mich., $1.74; Pittsford, Mich., $1.61; and White Pigeon, Mich., $1.88.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-766-A—Crushed stone, carload minimum weight 90 percent of marked capacity of car except when car is loaded to full visible or cubical capacity, actual weight, but not less than 40,000 pounds will apply, from Joliet, Ill., to Tampico, Ill. Rate $1.29 per net ton, not subject to ExParte 162 or 166 increases. Proposed: To extend the present expiration date of June 30, 1949.

GENERAL FREIGHT TRAFFIC COMMITTEE EASTERN RAILROADS

Bulletin G-350 (carriers)—Crushed stone and crushed limestone screenings (not ground or pulverized), in open top cars, carload minimum weight 90 per cent of marked capacity of car, etc., from Carey, and Marion, O., to C&O (CD) Ry. stations in W. Va. rates based on West Penn Single Line scale for the distance including ExParte 162-B and 166-C increases but subject to Tariff of Emergency Charges X-168. Reason: Comparable with rates applying from other points.

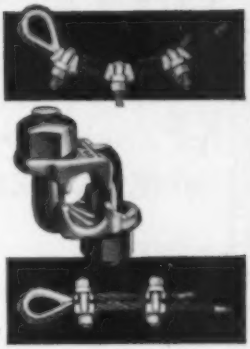
NEW ENGLAND TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 133 (2-R)—To establish commodity rate on stone, crushed, (trap rock), in bulk in open top cars, minimum weight 90 percent of marked capacity of car, except when cars are loaded to full visible or cubical capacity, actual weight will apply, from Westfield, Mass., to East Chatham, N. Y. Present $1.40 per net ton. Proposed 98 cents per net ton. Rates include ExParte 162 and 166 increases but are subject to ExParte 168 increase. Reason: To secure for rail haul as against movement from nearby quarry by truck direct to the job.

PACIFIC FREIGHT TARIFF BUREAU NORTH PACIFIC COAST FREIGHT BUREAU JOINT DOCKET

Docket JT 394 Amended (shipper)—

AVOID THE "FINGER-PINCH"



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"KEEPS PROMISES"

Request for rate of 25 cents per hundredweight, minimum weight 80,000 pounds and rate of 30 cents per hundredweight, minimum weight 40,000 pounds, on gypsum, crude, crushed, ground or powdered, carload from Kodak, Lovelock and Parran, Nev., to Bend and Redmond, Ore.

Docket JT-516 (Shipper)—Request for rate of 59 cents per hundredweight on lime, carload, from Dolomite, Utah, to Port Angeles, Wash. Subject to tariff X-168, minimum weight 80,000 pounds.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 48178 (1)—Proposed to establish on lime, Limedale Spur, Arkansas, to Mobile, Alabama, for export a rate of 518 cents per net ton applicable to shipside on lime, common, hydrated, quick or slaked, in bags or barrels, carloads, minimum weight 50,000 pounds. Not subject to Tariff X-162-B or X-166-C.

Docket 48269 (2)—Gypsum, Texas and Oklahoma to Mobile, Ala. Establish rate of 500 cents per net ton on gypsum as described in Item 1375, Southwestern Lines tariff 20-T, from Acme, Celotex, Gypmine, Rotan, Sweetwater, Tex., El Dorado and Watonga, Okla. Amend Item 1377, Southwestern Lines tariff 20-T by canceling Route 12058 from the New Orleans, La. Gateway in connection with rate of $4.80 from Sweetwater, Tex., to Spocari, Ala.

TRANSCONTINENTAL FREIGHT BUREAU APPLICATIONS

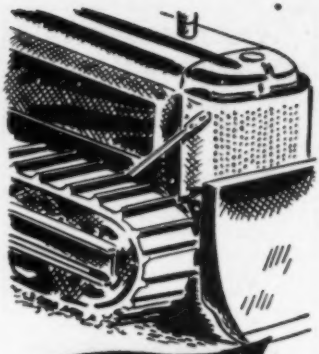
Supplement 1 to 5463 (shipper)—Screenings, ground or unground, carload, request for rate of 107 cents per ton from Ft. William, Ontario and 87 cents from Duluth, Minneapolis and St. Paul, Minn., to California points, minimum weight 60,000 pounds, except when cars of less weight carrying capacity are furnished for carrier's convenience, minimum weight is marked carrying capacity of car furnished, Tariff 46 (rates not subject to X-162 nor X-166).

WESTERN TRUNK LINE—NEW APPLICATIONS

Docket X-E-41-1089 (shipper)—Proposed to establish a rate of $3.75 per net ton on gypsum, crude or crushed (not ground) and gypsum rock, run of mine, carload, minimum weight 90 percent of marked capacity of car, from Fort Dodge, Ia., to Speed, Ind. Rate subject only to X-168 increase.

Docket E-41-1091 (shipper)—Proposed to establish on stone, crushed or ground, minimum weight, marked capacity of car, except when car is loaded to full visible capacity, actual weight but not less than 50,000 pounds will apply from Marblehead, Quincy, Ill., Hannibal, White Bear, Mo., to Minneapolis, Minn., Transfer and St. Paul, Minn. $2.30 per net ton.

Docket E-41-1097 (shipper)—sand, carload minimum weight 90 percent of marked capacity of car, except that when actual weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, the actual weight will be the minimum weight. In no case shall the minimum weight be less than 40,000 pounds, from Millington, Sheridan, Ore., Utica, Ottawa and Wedron, Ill., to Group B (Western Trunk Line Tariff) 1) (Omaha, Neb., etc. Proposed 13 cents per one hundred pounds.



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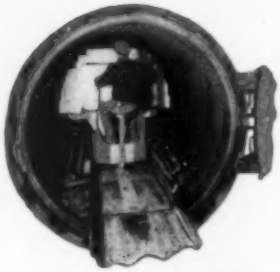
ESTABLISHED 1881

THE CONCRETE MANUFACTURER

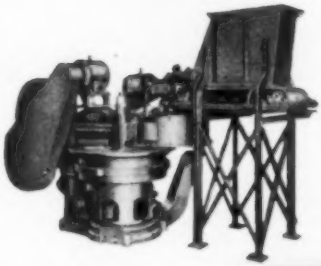
A SPECIAL SECTION OF PIT & QUARRY

A COMBINATION THAT'S HARD TO BEAT

High Pressure Kiln being loaded with blocks to be cured



J&C Model "CP" Brick Press



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WITH J&C HIGH PRESSURE EQUIPMENT YOU CAN:

- ..get all the shrinkage out of your product down to normal expansion and contraction.
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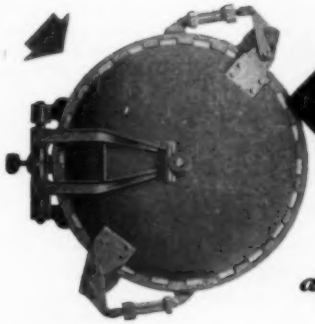
- ..use less cement for a better product.
- ..make today . . . sell tomorrow.
- ..reduce costs for handling, storage space and stock pile and save 15 to 25% over all.

WITH J&C MODEL "CP" BRICK PRESS YOU CAN:

- ..produce up to 14,000 perfect concrete or sand lime brick per 8 hour shift.
- ..apply 75 ton forming pressure to get a clean sharp brick.
- ..make better brick . . . . that lay up faster in a stronger, neater wall.
- ..eliminate pallet costs because J&C made bricks need no pallet for handling.
- ..modernize your plant, reduce production costs, and have a better product.

Try the J&C combination today . . . . a J&C Model "CP" Brick Press for faster economical production and a J&C High Pressure Curing Kiln for "shrink proofing." Remember . . . . get the shrinkage out of your brick and block and you'll eliminate cracking walls.



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Utmost Structural Stability and Fire-Safety

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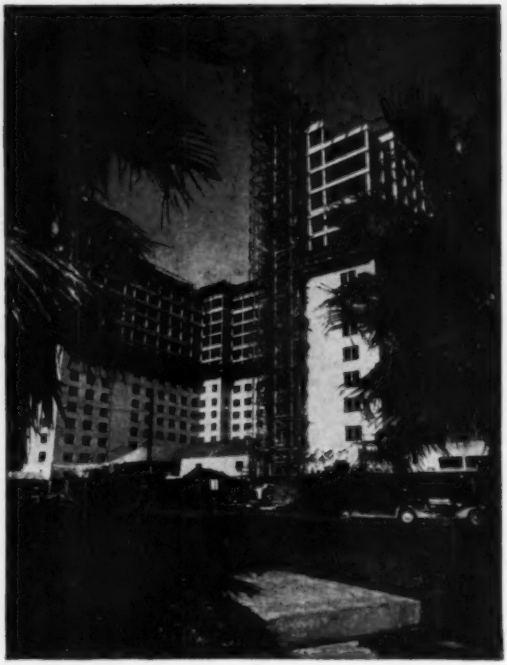

NATIONWIDE interest in The Shamrock, largest hotel built since the war, naturally dwells on deluxe decor and distinguished service. But the structure itself is as sound of heart and sinew as modern building methods can make it: Strong, durable concrete throughout . . . fireproof of itself . . . *quality* concrete, every cubic yard, with mixes carefully designed to produce the full potential of strength and durability provided by cement itself of highest quality. As in New York's Waldorf-Astoria, Lone Star Cement was used exclusively in The Shamrock—a total of 50,000 bbls.

Lone Star Cements meet every construction need: LONE STAR PORTLAND CEMENT, for outstanding performance in all types of construction . . . 'INCOR'* 24-HOUR CEMENT, where dependable high early strength cuts time, form and winter costs . . . LONE STAR AIR-ENTRAINING CEMENT for highway work and many other uses . . . LONE STAR MASONRY CEMENT for quality masonry. There is added assurance in the unvarying quality of Lone Star Cements.

*Reg. U. S. Pat. Off.

THE SHAMROCK . . . . . GLENN McCARTHY, Owner
Architect-Engineer: WYATT C. HEDRICK
Construction Managers:
STONE & WEBSTER ENGINEERING CORP.
Contractors:
Foundation: R. P. FARNSWORTH & Co., INC.
Superstructure, Service Building & Garage
TELLEPSEN CONSTRUCTION CO.
Swimming Pool: PADDOCK ENGINEERING CO. of TEXAS

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,000,000 BARRELS ANNUAL CAPACITY

NEWS OF CONCRETE MANUFACTURERS

John Olsen, Pioneer of the Block Machine Industry, Succumbs at Age of 86

John Olsen, one of the last of the true pioneers in the concrete block machinery field, passed away at his home in Rock Rapids, Iowa on May 14. He was 86 years old.

Mr. Olsen and the late Charles Bradley of Rock Rapids were co-founders in 1903

John Olsen

of the Anchor Concrete Machinery Co., an organization which has been closely identified with the development of the concrete masonry unit field. This enterprise was moved to Adrian, Mich., in 1922.

Until a few years ago Mr. Olsen was active in the contracting business at Rock Rapids, and he was one of the pioneer users of concrete masonry units in that area. As a result of his dissatisfaction with the design of masonry units, he developed what became known as the "Anchor continuous airspace block." He is also credited with having built the first reinforced concrete bridge in the United States.

Mr. Olsen's interest in the block field is carried on today by his son, Eugene F. Olsen, and his grandson, Gene D. Olsen, who are respectively president and vice president of The Gene Olsen Corp. of Adrian.

California C. M. Producers Hold Membership Meeting

The general membership meeting of the Concrete Masonry Manufacturers Assn., held at Rodger Young Auditorium at Los Angeles on May 24, 1949, was well attended by members and associate members. The new advertising and promotion program was thoroughly outlined and heartily discussed. Also on the docket was the new schedule of dues, designed to make a productive advertising program really sell more blocks.

General outlines and procedures discussed at the meeting are in the hands of the board of directors for final checking and detailing, in accordance with the association by-laws.

Mortarless Tile Installations Reported for Six Concerns

Mortarless Tile Machine Co., Inc., 2623 Riverside Drive, Los Angeles, Calif., announces the following Mortarless installations recently completed:

Butte Mortarless Block Co., Route 4, Box 4398, Paradise, Calif.; Mortarless Concrete Block Co., 215 Herbert, Alton, Ill.; Compania Azucarera Yateras, Apartado D, Guantanamo, Cuba; Mortarless Block Co., 1893 South Union Avenue, Bakersfield, Calif.; C. A. Maracaibo Towing Co., Apartado De Correas No. 613, Maracaibo, Venezuela; W. B. Cope and J. T. Bailey, Princeton, W. Va.

Basalt Rock Introduces Strestcrete at Field Day

The Basalt Rock Company, Inc., of Napa, Calif., some weeks ago conducted a field day for architects, engineers, building officials, contractors and others connected with the building industry to introduce their new product, "Strestcrete."

Strestcrete, a reinforced concrete, is utilized in units turned out on automatic machines. The edges of each panel or slab are precision ground and the units are laid by means of steel bars positioned in grooves. Slabs or panels may be had in various thicknesses, from 3 to 12 inches and are assembled in widths up to 8 feet.

Coming Events

October 10-14, 1949—San Francisco. First National West Coast meeting, American Society for Testing Materials, Fairmont Hotel.

October 24-28, 1949 — Chicago. 37th National Safety Congress and Exposition. Stevens, Congress, Morrison, Sherman, and Palmer House hotels.

January 22 (week of), 1950—Chicago. 20th annual convention and exhibit, National Ready Mixed Concrete Association, Stevens Hotel.

Steel Column Protected With Vermiculite Plaster Gets 4-Hour Fire Rating

In a test conducted by Underwriters' Laboratories a steel column protected with 1½ in. of vermiculite plaster on metal lath did not reach its critical temperature until after 4 hr. and 42 min. of exposure to fire in the testing furnace. In a second test the time of failure of a steel column protected with 1 inch of vermiculite plaster was 3 hr., 32 min. Underwriters' Laboratories have issued official fire ratings of 4 and 3 hours for the 1½-in. and 1-in. thickness.

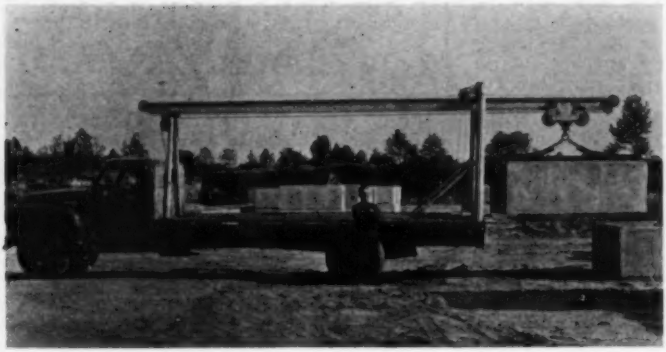
• After fire test of 4 hrs. 42 min.

The plaster was mixed in the following proportions: for the scratch coat, 100 lbs. of fibred gypsum plaster to 2 cu. ft. of vermiculite plaster aggregate; for the brown coat, 100 lbs. of fibred gypsum plaster to 3 cu. ft. of vermiculite aggregate. These proportions are in keeping with American Standards Association standard specifications for gypsum plaster.

The vermiculite plaster was applied to metal lath spaced 1¼ in. away from the column flanges. Space between the back face of the metal lath and the column flanges was maintained by the use of metal lath spacers. This space was then filled solid with vermiculite plaster and pressed through the lath at the time of application. A white coat finish was applied to both columns.

Vermiculite plaster is the only type of plaster that has obtained a rating as high as 4 hours for column protection. While the plaster thickness for the 4-hour rating was 1½-in., Vermiculite Institute (at whose request the tests were made) believes that in view of the outstanding performance of the vermiculite plaster in these tests, a 1¼-in. thickness over the face of metal lath will provide a 4-hour rating.

Bergen Machine & Tool Company, Inc., 189 Franklin Avenue, Nutley, N. J., announces that *Block Plant Chatter*, a folder containing news of concrete products and useful hints for operators, is sent free each month to Vibrapac plants. Those interested in having their names placed on the mailing list may write directly to the company.



• Production of precast concrete septic tanks is a profitable sideline activity for many operators of concrete block or ready mixed concrete plants. With the delivery rig pictured above one man can load two septic tanks on a truck in fifteen minutes. Each tank weighs approximately 6,000 lbs. In addition this rig can be used for lifting and handling the tanks during the casting operation. The rig is manufactured by the Carpenter Manufacturing Co., Richmond, Va.

I DON'T KNOW MUCH; I'M JUST A BEGINNER. . .

When clay wall coping of the conventional type became scarce, I made some out of concrete. Made forms out of wood at a beginner's cabinet shop. Cost $8 each. The first one wouldn't turn loose because we hadn't left enough pitch on the sides so it would strip. Takes more pitch than you would first think; makes it look better, too. We made ten forms and get out 20 feet each day. Sells for 35 cents per foot; costs 4 cents for material; 10 cents for labor and about 2 cents overhead. Not much, but it adds up. Found that if the edges were filled first and vibrated on a table moderately, there was a better finish, less voids; but don't vibrate the things when the rest of the forms are filled, because it will cause them to crack from end to end lenghtwise, right along the top of the hogback crown. Fill'em up and then wait for a while before you come back over them with a good trowel. We broke a lot of them stripping out on a table; then Vinz made a table and fixed it with 4 in. of sand on top, so when they dropped out they didn't break. You see, they were pretty tender the next morning. We keep the new ones wet for several days.

Vinz don't know much, either, because he is just a beginner, too. We have so much fun running the plant and trying to please the sales department that we forget to stop and figure costs sometimes. Well, we got a red-headed bookkeeper. Red don't have blood like most men; his heart pumps ink. Sometimes Red waves sheets of paper under our noses and screams about red ink. Then we get down on the floor with a piece of welder's chalk—we always got a piece in *our* pocket now that we got the welding outfit—and we figure. Then we rub it out and figure some more. The other day Red came rampaging out into the plant waving a piece of paper, just when Vinz and I were having fun trying to line up a block machine mold box that wouldn't quit making lopsided blocks. That piece of paper had red ink on it.

It seems Vinz and I had tried piecework on second-shift block machine operations, and according to Red we were not making money. So Vinz and I pulled out our chalk.

Our plant is small and we couldn't afford a second shift foreman. We had been reading a lot about the incentive pay plan. We tried it. Trouble! Lopsided blocks, too wet, too dry, cracked, corners knocked off in the kilns, under yield on cement, pay scale too high, abused and misused tools and machinery —these were the results we had reaped. We quit it. This doesn't necessarily mean we condemn incentive pay plans; but for Vinz and me it didn't work out. An old timer in the business told me it wouldn't, but I am a beginner. Maybe later, our labor attitude improves, we can make it work.

• Officials of the National Concrete Masonry Association, representatives of the press, and a number of concrete masonry unit producers were the guests of Paul Woodworth of The Waylite Co. and Harry N. Sorenson of the Waylite Concrete Masonry Co. at an open-house preview of an exceptionally attractive Waylite concrete masonry home in Racine, Wisc. Pictured at left below are R. E. Copeland, technical director of the association, E. W. Dienhart, executive secretary, Henry Bucholz, plant manager for the Illinois Brick Co., Mr. and Mrs. Harry N. Sorenson, owners of the residence, and Otto Buehner, president of Otto Buehner & Co., Salt Lake City, Utah. Waylite concrete masonry units were used for the foundation, exposed walls, backup, partitions, and as filler units in the floors. The spacious, ranch-type home, completely furnished, was inspected by several hundred prospective builders in the Racine area.

Frank J. Cogan Elected Head Of N. E. Concrete Pipe Assn.

The Northeastern Concrete Pipe Association held a meeting of New England and Upper New York State manufacturers in the DeWitt Clinton Hotel, Albany, N. Y., on April 11. Frank J. Cogan of Great Lakes Concrete Pipe Co. in Buffalo was elected president; Henry C. Eames of New England Concrete Pipe Corp., Upper Newton Falls, was elected vice-president; and George L. Pullin, Jr. of Universal Concrete Pipe Co. at Syracuse, N. Y., was made secretary-treasurer.

J. A. Dunn and Howard F. Peckworth, president and managing director, respectively, of the Am. Conc. Pipe Assn. addressed the meeting. Mention was made of the increased use of concrete pipe cattle passes in the Northeast and the development of specifications for plain non-reinforced concrete pipe for the culvert ends where there is little or no load on the pipe.

George M. Redding, president of the Massey Concrete Products Company, Chicago, was recently elected president of the Union League Club of Chicago.

Long-Established Sand-Gravel Concern Now Operating Modern Ready-Mix Plant

• General view of A. E. Fowler & Son's new ready-mixed concrete plant located near Orange, Calif.

AFTER serving the southern California orange-growing empire since 1912 as a producer of sand and gravel, the firm of A. E. Fowler & Son of Orange, Calif., broadened its operations in the summer of 1948 when it began supplying commercial ready-mixed concrete. A modern all-steel plant was erected and a fleet of eight truck-mixers is now busily engaged in this service. The firm continues to produce its own aggregates and is now its own chief customer, since more than half the output of washed gravel and sand is now utilized by the ready-mix plant.

The batch plant and bin structure was designed and constructed by the Kenweld Company of Los Angeles. It was erected against a bank in the old, worked-out pit so as to utilize gravity in the flow of material. There is a vertical drop of 45 ft. from the top of the bins to the truck-mixer loading station, eliminating the need for elevators or inclined conveyors. The level haul from the loading bunkers at the sand-and-gravel plant to the concrete plant bins is only about 100 ft., and the 125-ton capacity, 3-compartment bin of the latter is kept filled by company dump trucks during times when they might otherwise be idle.

The two coarse aggregate compartments and the sand compartment in the concrete-plant bin are separated by an enclosed combination 400-bbl. cement silo and feed-hopper section which is served by bulk-cement trucks. This central cement section allows the cement to be laced into the mix between the aggregates during batching, a system which has many recognized advantages and provides excellent intermixing of the dry ingredients when the entire batch reaches the collecting hopper below.

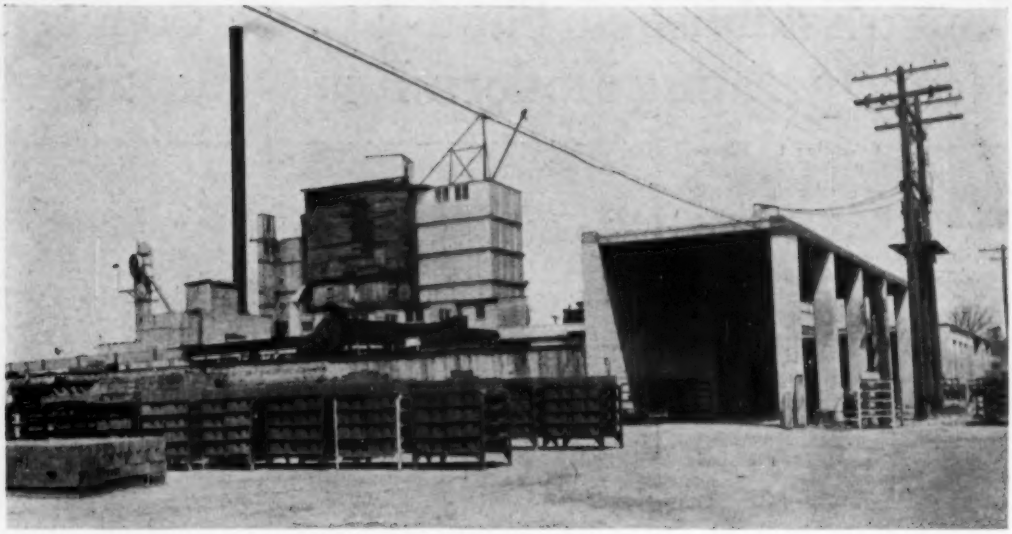
A 4-beam Hardy scale with over-and-under indicator weighs out the quantities, including the cement; and fast-acting air-operated gates controlled by small hand valves on the batching floor can cut off the feed into the 4-cu. yd. batch box with extreme accuracy. A Neptune meter supplies the required amount of mixing water automatically. Bins and hoppers were built with steeply-sloped sides to facilitate the free flow of materials, since the freshly-washed aggregates brought over from the gravel plant are usually quite wet. As a further precaution against possible hang-ups, all hoppers and bins are fitted with air-powered vibrators.

An 18-in. by 12-ft. horizontal belt-conveyor traveling at 550 f.p.m. throws the batch into the forward end of the mixer drum on a long, flat arc, aided by the mixing water, which enters the drum under pressure from a nozzle alongside the tail pulley end of the loading belt. Originally a conventional loading spout was used, but it was found that the high-speed belt did a faster job of loading the drums and enabled the full capacity of the units to be utilized. The entire batching and charging cycle now takes

(*Continued on page* 209)

• Left, below: A view of the batching floor, showing the scales at the left and the dial of the water meter. The operator is actuating a small lever which controls one of the air-operated bin-compartment gates.

• Below: The collecting hopper beneath the batcher and the high-speed (550 f.p.m.) belt which charges the truck mixers.



• A general view of Cinder Block & Material Company's block plant at Indianapolis, Ind. Established in 1906, this company produces in excess of 15,000 8-in. equivalents a day.

AUTOMATIC QUALITY CONTROL for CONCRETE BLOCKS

By EDWARD BRUNENKANT

DOWN through the years, from 1906 to be exact, the Cinder Block and Material Co. of Indianapolis, Ind., the oldest block company in Indiana, has endeavored to produce better block more economically. As a direct result of this effort this company has been responsible for several important contributions to the development of new and improved equipment and methods for concrete block production. About ten years ago they designed and built the first air hoist, which today is an integral part of practically every high-capacity block plant in the country. Their newest device, Automatic Quality Control with Electro-Visor and Pallet Oiler, promises revolutionary dimensional control of concrete masonry units through electronic regulation and timing of the block-producing machinery.

Although Automatic Quality Control equipment was designed primarily for quality control of block (uniform height and density), it has made possible at the same time a speed-up in the output of the block machine. As high as 15 blocks per minute can be made on a machine rated at 10 units per minute —the output varying with the type of aggregate handled and the mix used.

Essentially, the Quality control package consists of an electronic unit for maintaining a uniform time of squeeze; a special circuit for controlling height; improved efficiency of feeding and vibration through better synchronization of the vibrating motors; and a pallet oiler which assures clean pallets for exact height control. The electronic device, or Electro-Visor, measures the time of squeeze. This can be varied according to the design of the concrete mix but is generally set between 2.5 and 3 seconds. If the squeeze time is too short, the AQC equipment will increase the time of feed by stopping the drive motor while the feed drawer is in registration with the mold box. This allows more material to flow into the box. When the time of squeeze is measured for that pallet, a further correction will be made if the time is too long or too short; i. e., if the time of squeeze is too short, the feed time of the next pallet will be lengthened; if too long, the feed cycle will be cut down. It has been found that for usual variations in the mix AQC will correct the squeeze cycle in one pallet.

In this system it is essential for maximum machine output to step up the efficiency of feeding and vibrating. This is done in several ways, the most important of which is the device for obtaining synchronization of the vibrating motor. This is accomplished by rewinding these two motors, taking off the magnetic brakes and substituting reverse current braking. The speed with which they are stopped is adjustable through the use of a newly designed zero speed switch. Elimination of the brake permits the two

• Personnel of the Cinder Block & Material Co. At the extreme right is Allan C. Miller, president of the company.

• One of the four high-production block machines currently operating at this plant. Notice the detachable boards used as cross pieces in the rack. This arrangement permits the offbearer to drop the pallet in place on the rack instead of sliding it into position.

• That part of the Automatic Quality Control package which is attached to the main drive cam. Installation of this device is said to insure nearly perfect height and density control of the block, as well as to speed up the output of the machine.

vibrating weights to drop down toward the floor when the motors are stopped. When the motors are started, the vibrator weights stay in the same relative position, giving smoother, synchronized and more efficient vibration.

Although the principle of Automatic Quality Control is adaptable to any vibrating machine, it has been specifically designed for use with Besser Super Vibrapacs — because 3 of these machines are used at Cinder Block & Material's plant, where AQC was developed. However, its adaptation to machines of other makes is being planned for the near future.

The development and patenting of AQC led to the formation of M. & M. Engineering Corp. The two principal participants in this organization are Allan C. Miller, president of the Cinder Block & Material Co., proving-ground for the system, and Edward Meeker, former engineer for the block company, who designed and developed quality control.

Although Mr. Miller is naturally interested in extending the use and applicability of quality control, his first and main interest is the Cinder Block Company, one of the largest producers of concrete masonry units in the country. Production at this plant runs from 15,000 to 20,000 8- by 8- by 16-in. equivalents a day, with about 50 percent of the output going into cinder units.

Sand and gravel are delivered to the plant in hopper-bottom cars and discharged over a track hopper for elevation to two 100-ton overhead storage bins. Cinders are pulled into the same hopper with a drag bucket and drum hoist from an outside storage pile, after which they are passed through a rotary screen with ¾-in. opening to a double roll crusher. The crusher product is elevated to top of a 200-cu. yd. bin and then is screened on a single-deck vibrating screen fitted with a ⅜-in. cloth. The oversize is reduced in a Swenson pulverizer.

Two 25-cu. ft. traveling buckets suspended from Cleveland enclosed tracks are used to charge the mixers. These buckets are positioned over the mixers by push-button stations. When standard concrete block is being made, one bucket is used for sand and one for gravel; when cinder block is being produced, one bucket is filled with coarse cinders and one with fine.

Bulk cement is delivered to the plant in hopper-bottom cars and unloaded over a screw conveyor which empties into the boot of a bucket elevator. The Butler Bin Company has installed unusual automatic cement-batching equipment which weighs and distributes the cement to each mixer automatically. It consists of a primary cement screw running from the cement bin to each of five weigh batchers permanently positioned over their respective mixers. After a batcher has been discharged, the mixer operator pushes a button and the screw auto-

• Practically any repair job can be handled in the company's well-equipped machine shop.

matically weighs and feeds the proper amount of cement into the batcher. It is accurate within one or two pounds. In case of a breakdown, a stop switch located beside the mixer shuts down the whole system. A traveling weigh batcher is used as a standby in case of such emergency.

The company uses four 50-cu. ft. Besser mixers for block and a smaller one with skip hoist for other purposes which admittedly are operating at peak capacity when the block machines are outfitted with AQC. For standard concrete block, the mix is designed to use 25 cu. ft. of sand, 25 cu. ft. of gravel, 350 lbs. of cement and 25 lbs. of lime. Water is proportioned by volume metered through a gauge installed directly in the water line. The cinder block mix is somewhat richer in cement and uses fly ash in place of lime, as a plasticiser. The company uses air-entraining cement exclusively in both mixes. Frequent tests are run on the Yoder compression machine in the company testing laboratory which assure both the company and the prospective customers that the blocks meet all strength specifications. Normally, the standard 8- by 8-in. gravel block produced here will test over 1000 lbs. in three days and the cinder block will test over 800 lbs. after the same period of time.

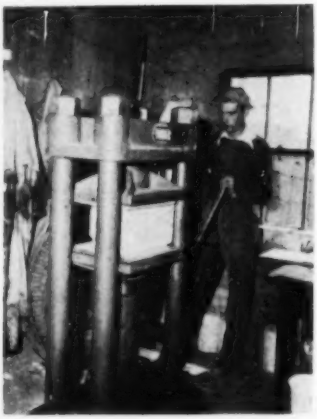
An electric hoist is used to return the pallets from the empty racks to the back of the machine. Pallets are oiled through a pallet oiler, which is part of the Quality Control package. Essentially, the oiler consists of copper tubing punched with holes which are opened and closed by magnetic valves. The oiler may be adjusted to oil the pallet as lightly or as heavily as desired and has certain patented features, making it virtually drip-proof.

• Yard movement, as well as loading trucks, is handled with this lift truck. The machine is equipped with a side-shifting device which permits quick and easy stacking of the cubed blocks with minimum breakage.

Air for the whole plant is provided by two stationary compressors which maintain 125 lbs. of pressure in the line. These two Gardner-Denver units are interlocked so that when the load increases the second compressor will automatically kick in. Both are connected to a single tank through an "after cooler" which removes moisture from the compressed air. Water for the "after cooler," for the office cooling system, and the entire plant comes from deep wells on the property.

Green blocks are offborne onto steel racks holding sixty 8-in. equivalents. The pallets are set on top of loose boards which form the shelves or cross pieces of the racks. By using loose boards, in place of shelves permanently tied to the racks the machine operator can drop the loaded pallet into position instead of sliding it into the rack. The loaded racks are moved to the curing rooms with Erickson flatbed lift-trucks. One transfer man for each machine moves the green units to the curing room, then takes a rack of cured units to the yard, and returns the empty racks to the machine. The same pallets stay with the rack. There are 12 curing rooms in all; two hold 40 racks, two hold 32, six hold 24, and two hold 16. All rooms are closed at one end, with the open end closed during the curing cycle with steel doors suspended on pipe frames.

• Concrete for the joist and lintel gang forms is poured from a hopper suspended from overhead rails.

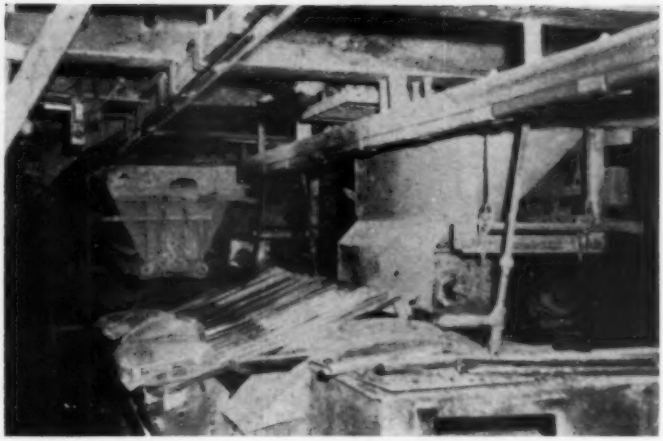


• Periodic tests of strength of the blocks are run on this compression machine.

Blocks are cured with live steam for an average period of 10 hours at temperatures ranging from 160 to 170 deg. F. The steam enters through copper piping running along both sides of the room, with outlet holes so placed that the steam is directed toward the floor. Water sprays mounted on each side of the kiln are turned on at 4 o'clock and left for a half hour, and again at 7 o'clock the following morning for another half hour.

The steam is generated in a 125-hp. low pressure (20 lbs.) coal-fired boiler. An auxiliary Steampac fully-automatic 100-hp. (12 lbs.) boiler was recently bought for added capacity. The boilers also provide heat for the plant, as well as steam for the aggregate bins during the winter months.

Freshly-cured blocks are cubed by hand, 125 for cinder and 100 for standard. The cubed units 5 block wide by 5 rows deep are removed to the storage area by a 5-ton Ross carrier 10-prong lift-truck equipped with a side shifter. This side shifting attachment is said to save a great deal of time and breakage in stacking the cubes. Two Hyster lift-



• Aggregates are proportioned in a traveling weigh batcher suspended from overhead rails. Cement is automatically weighed and conveyed in a system built especially for this plant.

trucks are also used for materials handling in the yard.

In addition to all types of concrete masonry units the company does a large business in precast lintels and floor and roof joists. The joists are made to order for each job in lengths up to 25 feet, in gang forms on 7 vibrating tables. Each table has 2 to 4 vibrators located at different parts of the table according to size.

After a purchaser submits his general plan the engineering department, headed by Walter Glaser, structural engineer, makes a complete design and lay-out. This shows the position of all joists and the reinforcing used in each, also the placing of the slab reinforcing in the slab over the joist. Joists are designed and furnished not only for all types of masonry buildings but also for steel frame and reinforced concrete structures.

The use of concrete joists allows a considerable reduction in cost due to the saving in form work and is becoming very popular.

In order to simplify the handling of joists on the job, the company has a Hydrocrane mounted on a 1½-ton truck which is often used to take the joists off the truck and place them in position on the job. The crane also carries a small clamshell digger and several concrete buckets. This equipment is being used not only to handle the joists but also to place the concrete on the job.

Because of the size of the operation at the Cinder Block & Material yard, the company maintains additional facilities which are rather unique in the concrete masonry industry. For example, the company's machine shop is unusual for both its size and its completeness. Equipment in the shop includes three lathes, one milling machine, two external grinders, one Delta band saw, two drill presses, an electric pipe threader, one Kalamazoo band saw, two General Electric arc welders, and two portable gas welders.

The company has a tractor-driven street sweeper for cleaning the cubing areas, drives and storage yard; and a Caterpillar bulldozer with winch for levelling the yard and other purposes.

A large new garage is nearing completion. This will contain a shop with overhead crane especially planned for servicing trucks.

A steel roof structure over the railroad track and an addition to the office will soon be erected.

Anchor Concrete's Reinhold Not Troubled by Let-Down

Frederich W. Reinhold, president of Anchor Concrete Products, Inc., Buffalo, reports that supply is now meeting demand for the first time in four years.

The Anchor Concrete plant was operated at capacity throughout the winter, building up supplies; it now has an inventory of about 800,000 blocks, said Mr. Reinhold. "It's the biggest inventory we ever had. We're not worried about it, though. Demand has fallen off some from a year ago but it is still good."

The plant is currently operating below capacity, producing about 400,000 blocks a month. Mr. Reinhold said he expects to receive sufficient supplies of cement most of the year.

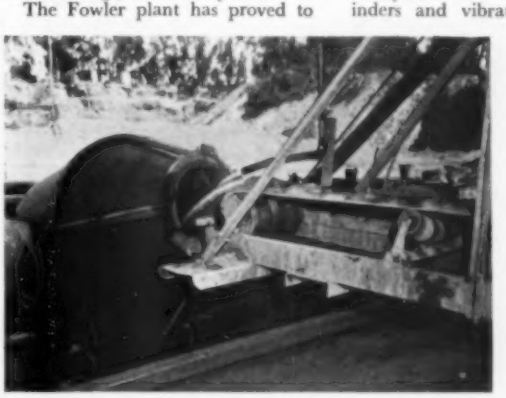
Long-Established Concern

(*From page* 205)

only 3 minutes, while the 3-cu. yd. capacity of the truck mixers has been increased to about 3½-cu. yd. with the belt loader.

The eight "Challenge" high-discharge truck mixers are a type recently introduced by the Cook Bros. Equipment Company of Los Angeles. They are mounted on Ford 2-ton truck chassis. A separate Ford industrial-type engine behind the cab drives the drum. High payload is an outstanding feature, a saving in dead weight of from 1,500 to 2,000 lbs. having been effected by using high-tensile steels and long-wearing fabricated parts to eliminate the need for heavy castings. Low clearances permit the units to get into tight places, such as the doorways of industrial and commercial buildings, for inside pours.

The Fowler plant has proved to be extremely economical to operate. Compressed air for the gate cylinders and vibrators and a small motor driving the loading belt constitute the total power requirements. Deliveries are made throughout Orange County, including the neighboring communities of Anaheim and Santa Ana. Elmer Fowler, the "son" in the corporate name of A. E. Fowler & Son, is general manager of the operations.



• A truck mixer being charged with water and dry-batched aggregates and cement via the high-speed belt.

The Strength of Large Concrete Pipe

AT this date there are two standard methods of testing concrete pipe, the Three-Edge method and the Sand Bearing method, both recognized by the A.S.T.M. According to experiments carried on some time ago by the Iowa State College Experimental Station on 30-in. and smaller diameter pipe, the ratio of the required load carrying capacity by the Three-Edge method is 2/3 of the load carried when tested by the Sand Bearing method. This ratio of 1.0 to 1.5 has been accepted almost without question regardless of pipe size.

Recently, however, when the University of Washington tested 72-in. concrete culvert pipe by the Sand Bearing method, it was found that the pipe failed by 25 percent to meet the 2/3 ratio required by state code specification. As this pipe was part of a large order placed by the Washington State Highway Department, it was decided to verify the 1.0 to 1.5 ratio by testing 40 sections of 72-in. pipe by both the Sand Bearing and Three-Edge methods.

The results of this investigation, as reported herein, are abstracted from a paper presented by William R. Mason, instructor in civil engineering, University of Washington, before the 1948 Northwest Conference on Road Building. Mr. Mason also conducted the tests.

The Three-Edge Method

The pipe was centered in the testing machine so as to take the best advantage of the placement of elliptical steel. The lower bearing consisted of two wooden strips, 2 by 2 in. by 5 ft. with vertical sides having their interior top corners rounded and spaced a distance apart of 1 in. per foot of pipe diameter (see Figure 1a).

The upper bearing block consisted of a 14- by 14-in. by 4-ft. long timber with steel angles screwed to the vertical sides. A 4- by 12-in. timber was used under the 14-in. beam as a protection for the latter, and a piece of Celotex was placed under the 4 by 12 on the pipe to help distribute the load more evenly over the slightly rough surface of the pipe. The load was applied through a spherical seated bearing attached to the head of the machine.

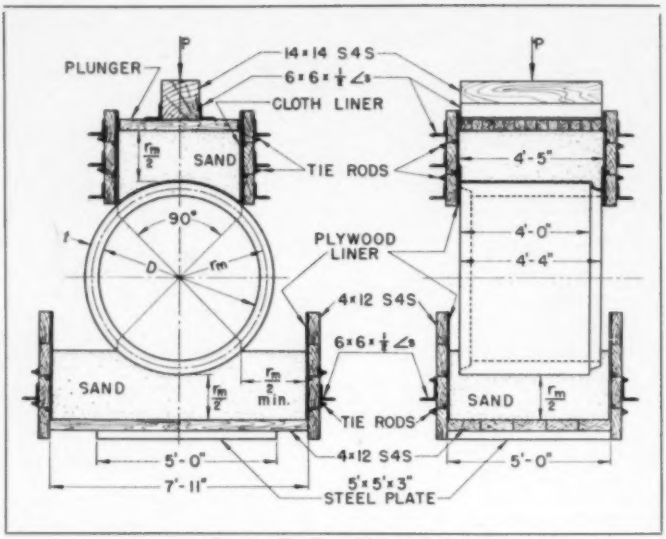


Fig. 1a. The Three-Edge Method.

The Sand Bearing Method

With this method (see Figure 2a) the specimen is carefully embedded in sand, above and below, for ¼ of the circumference of the pipe. The depth of the bedding, above and below the pipe, was ½ the radius of the middle line of the pipe bearing. The top frame consisted of a box without top or bottom held together with a ⅞-in. diameter tie rod. The inside of the box was lined with ½-in. plywood. A heavy fibre glass cloth was used to form the bottom of the top box; this prevented the sand from leaking out and also permitted pockets in the cloth to be formed between the pipe and the top box during testing.

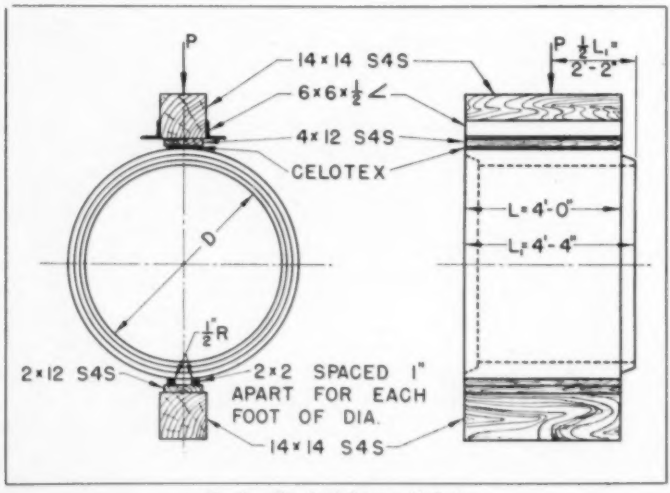


Fig. 2a. The Sand Bearing Method.

Loading and Reading Deflections

For both tests the load was applied at an approximate rate of 2,000 lbs. per lineal foot of the pipe per minute. A reading of the horizontal deflection was taken at maximum load. In addition, both horizontal and vertical permanent deflections were taken after the load had been released. In accordance with A.S.T.M. specifications, the

(Continued on page 216)

View of concrete products plant.

Adjoining plant, where expanded-shale aggregate is produced.

Rocklite Products Takes Over Expanded-Shale Production

By HARRY F. UTLEY

another ON THE SPOT report

ONE of the Pacific Coast's chief producers of lightweight concrete block—Rocklite Products, of Ventura, Calif.—early this year acquired complete control of the Rocklite Co., Inc., which produces the expanded-shale aggregate itself. Both concerns are now operating under the "Rocklite Products" name and under the same management. The two plants adjoin each other with the block plant utilizing an important share of the output of the aggregate plant, the remainder being marketed commercially.

The aggregate plant was established in 1942 by the late W. W. Johnson and his associates, and much of the early war-time output was transported to a shipyard at National City, Calif., where it was used to build a fleet of 42 concrete tankers at a time when steel was in extremely critical supply. The original plant had one kiln but, in 1947, two more were added and today it is perhaps the largest engaged in the manufacture of this type of aggregate west of the Rockies.

Elevated storage bin and mixing and batching equipment.

The raw material is a stratified, light-blue shale requiring no blasting or digging, being dozed directly to a hopper which supplies the plant. Any oversize chunks of the shale are sledged through a 12-in. grizzly which spans the hopper. Beneath the hopper, a pair of toothed rolls shreds the material down to about 1-in. size and smaller. An inclined belt conveyor then carries the material to an Overstrom 5- by 12-ft. preliminary sizing screen which takes out the minus-⅜-in. shale, passing the oversize to an Overstrom double-deck screen which completes the sizing.

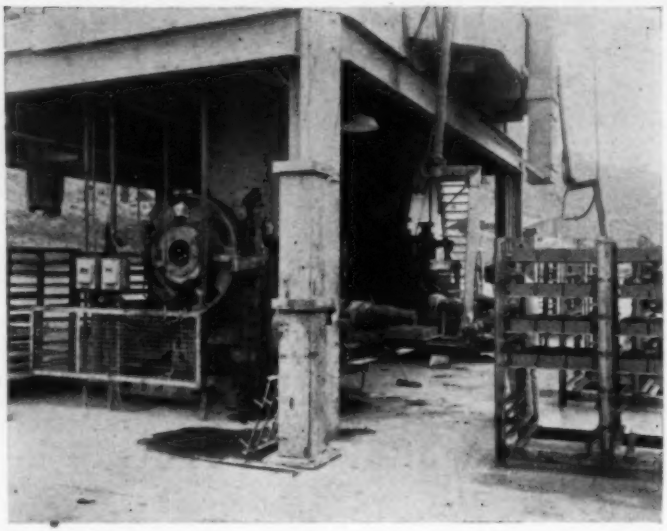
General practice in most expanded-shale operations pays little attention to the gradation of the raw material, crushing and sizing being accomplished after burning. The Rocklite plant, however, reverses this procedure somewhat. Sizing is done in the raw as above described, the four gradations—1, 9/16, 5/16, and sand—being chuted from the screens to separate 150-cu. yd. feed bins directly ahead of the kilns and burned separately by size.

The three kilns have the same diameter, 6 ft. The original kiln was 75 ft. long but has since been lengthened to 85 ft. The other two units, installed 2 years ago, are each 125 ft. in length. The kilns are lined with A. P. Green fire-brick, Empire SM grade, and are fired by Solar dual burners which can handle either natural gas or oil. The liquid fuel is used largely in the winter when natural gas is not always available for industrial use. The shale is preheated as it moves down the kilns and expands in the hot zone at a temperature of about 2,050 deg. F. Automatic control has been attained in the kilns by the use of electric-eye pyrometers.

Two 5- by 44-ft. rotary coolers handle the clinker as it is discharged from the kilns and an elevator carries it to an Overstrom 3- by 8-ft. triple-deck screen which makes a final separation of the cooled Rocklite. It is stored in a truck-loading compartment bin for loading delivery trucks or for distribution to open storage. Plant capacity is 600 cu. yd. of Rocklite per 24-hr. day.

In appearance, the finished aggregate particles are reddish brown in color and nearly spherical in shape. The thin, highly-impermeable shell of each particle encloses the vesiculated interior structure. Bulk specific gravity in the coarser sizes runs about 1.20; absorption about 16 percent. Dry, loose weight per cu. ft. is about 40 lbs. Concrete mixtures using straight Rocklite aggregates have developed strengths in excess of 5,000 p.s.i. at 7 days, the management reports.

The adjoining Rocklite concrete products plant is a modern, high-production set-up which uses the expanded-shale aggregate exclusively. Two Besser Supervibrapacs produce the blocks. These are located below the elevated storage bin and the batching-and-mixing floors. The bin is an 8-compartment cylindrical steel structure of the company's own design and having a total capacity



All the lightweight blocks are made on these two machines. Production often exceeds 1250 standard 8-in. units per hour.

of 640 cu. yds. of Rocklite aggregate. Bulk cement is stored in a 1,250-bbl. silo alongside. A fleet of seven Clark gasoline-powered lift-trucks handles the racks and pallets. Six 80-ft. curing tunnels have sufficient capacity to steam cure the output of two 8-hr. shifts on a semi-rotational basis. Output on the basis of the 16 hrs. the plant usually operates is about 20,000 standard 8- by 8- by 16-in. units, or equivalent, per day.

Shipments are made by truck within a 200-mile radius of Ventura, including Los Angeles and the metropolitan area, and Santa Barbara. Sales offices are maintained in these two cities.

The company also does considerable business in modular steel sash and waterproof portland-cement paint, both being marketed under the Rocklite trade-name.

This summer the plant expects to get into full-scale production on Strestcrete floor and roof slabs. These slabs, developed by its affiliate, Basalt Rock Co. of Napa Calif., are fabricated from special blocks made on the Vibrapac machines and using pre-stressed steel. After curing, the contact edges of the units are precision ground, assembled horizontally on a make-up table, and brought into compression with threaded tension rods. Torque wrenches are used to measure the tension on the steel rods so that the rods are prestressed to the designed loading of the floor or roof section. Thus, at full load, the Strestcrete slabs show little or no deflection. The slabs can be manufactured for spans up to 30 ft.

E. F. Brovelli, president of Rocklite Products, is also vice-president of Basalt Rock Co. Malcolm McIntyre, vice-president, is Basalt Rock's sales manager. General management of the Ventura operations is in the capable hands of E. A. Peterson. L. T. Frame is production superintendent.

Tonica Block Plant Expands Facilities

Foundations have been poured for an addition to Tonica's Concrete Block Plant on Route 51, New Lastant, Ill. The addition will be 40 by 40 ft. in size and will nearly double the size of the present plant. Three large concrete silos have just been completed for the storage of cement, sand and gravel and these will be enclosed in the new addition. Sydlowski & Gedye, the owners, will put in more machinery and also expect to handle ready-mix concrete for their trade.

Ohio Concern Celebrates 2nd Anniversary of Founding

A gala occasion at Wilmington, O., was the celebration of the second anniversary of the Clinton Construction Company, manufacturers of ready-mix and concrete blocks. More than 40 guests, dealers and representatives, attended a plant tour and demonstration.

During the two years of its existence the firm has sold approximately 2,500,000 concrete masonry units, in addition to tons of ready-mixed concrete.

Present at the demonstration was E. W. Dienhart, executive secretary of the National Concrete Masonry Association, who explained modular dimensions and answered the questions of the dealers. During the evening program following a steak dinner Mr. Dienhart addressed the guests on the subject of the concrete masonry industry. H. H. Brandon, president of the firm, also spoke; and two motion pictures were shown which illustrated the uses of concrete masonry.

Shale is preheated as it moves down the kilns and expands in the hot zones.

One of a fleet of 7 power lift trucks picking off a cube of blocks for loading on truck.

The Profit-and-Loss Statement—a Guide To Efficient Operation

• The profit-and-loss statement is a necessary guide in operating your business.

WHY is it that one concrete manufacturer seems to make a big net profit off an average-size yearly volume, while another, doing a heavy yearly volume, often winds up with a low net profit?

By BETTY LEE GOUGH

Sometimes the answer to this question lies in the producer's ability to use business records—specifically, the profit-and-loss statement—to guide him in planning policies, purchases, campaigns and prices.

Unless you know your costs pretty thoroughly, you are operating in the blind. You may find yourself making a good net profit. Again, you may even find yourself in the red at the end of your year's operations, unless you know exactly where you are going, what you are doing, and *why* you are doing it.

The profit and loss statement serves concrete manufacturers who know sound business methods as a constant blueprint of operations. From a study of the latest profit and loss statement, they know what mistakes were made during the period and how to avoid these mistakes in the future. They know what was profitable, and why; they know which promotions didn't put much into the till; and, again, they know why; so that in the future, plans can be figured more efficiently and profitably.

Ordinary bookkeeping gives you a fair grasp of these factors, too. But without a profit-and-loss statement, you are often in the dark when it comes to knowing your overhead expenses and the factors that made your year (or your quarter) a profitable or an unprofitable one.

The profit-and-loss statement condenses your year's records into one easy-to-read page. It tells where the expense and overhead money went, and it often gives you an idea of where your expenses can be cut in the future. It is a concise record of all the business you have done in a given period, and it is supremely necessary as a guide to sound management and operation in the future. Planning without the aid of an accurate profit-and-loss statement means that you are running your business without knowing for certain what you are doing.

How hard is it to prepare such a statement? Does a concrete manufacturer need special training in bookkeeping in order to do it? Does he need to call in a bookkeeper or auditor to go over his year's records and extract profit and loss statement from them as a dentist would extract a tooth?

Actualy, the preparation of a year-end, a semi-annual, or a quarterly profit-and-loss statement is a simple matter. Whether you make a statement once a year, twice a year, or every three months is up to you. There is no hard-and-fast rule of good business operation to govern this. There is only one consideration: If you compile your statement every quarter, you have fresh information constantly at your fingertips, while a once-a-year statement may grow cold before another statement is made. Many concrete manufacturers have found it a good practice to make quarterly statements and then add these together into a year's end profit-and-loss compilation for income tax purposes.

Most of the information on your profit-and-loss statement comes from your daily record sheets, which can be kept simply in a one-book system. In addition to the information regarding credit transactions, purchases, wages, office and general overhead expenses, advertising and sales costs, transportation, cash receipts, etc., which the regular "books" give you, it is necessary to figure in the inventories and a few other items such as bad debts, not shown as a rule on the regular books of a concrete company.

Depreciation is not always shown on the regular books. Yet it is an expense of your business. You should figure the depreciation on your equipment every year, basing it on the probable life of the equipment and its trade-in value when it is finally turned in for a new one.

If your profit-and-loss statements are pulled every three months, you should charge off one-fourth of the annual depreciation on each quarter's statement.

Your regular books tell when credit sales have been written off as uncollectible. When this happens, the sums should be entered on the profit-and-loss statement as bad debt losses.

The essential elements of a profit-and-loss statement are *receipts* and *operating expenses*. The latter is subtracted from the former to arrive at a figure representing net profit or the net loss for the period.

Your operating expenses include general overhead; wages paid to your employees; transportation; advertising; entertainment; rent; office supplies; taxes; license fees; business insurance; bank charges (and interest on any business loans you may have made) lawyer's fees for legal work connected with the business; and miscellaneous smaller items of expense.

If your company sent a contribution check to a charity, that, too, is a business expense and should appear as such on the profit-and-loss statement. If you joined a business association or a trade group, the local chamber of commerce, or any other body in which membership can be an asset to you as a concrete manufacturer, that also is a legitimite business expense and should be shown as such on the profit-and-loss statement.

Your postage, as well as any freight and express payments you have made, are an expense of the business. Utility company charges for electricity, power, gas, and telephone service come under operating expenditures. If you have made repairs to your equipment, these should be likewise charged off to

overhead on your profit - and - loss sheet.

How can this statement of profit and loss be used most effectively as a management tool in the operation of a concrete company? By a study of its various expense items you can determine how much was spent for each of the many business expenses incurred during the period. The best way to insure that your operating costs are in line with what they should be is to compare each cost figure with the volume sales as a percentage.

Let us say that you took in $10,000. During the period, you spent $500 for advertising. Your advertising appropriation, then, was 5 percent of your receipts. The best percentage for a concrete manufacturer to spend, in the opinion of many experts, is around 2½ percent. Thus it can be seen that too much was spent for advertising. Instead of $500, the ad appropriation should have been in the neighborhood of $250 to be in line with the practice of a majority of the truly successful concrete manufacturers.

By expressing each expense item in terms of a percentage of the volume, you can get a good line on how your business expenses compare with those prevailing in the business. If they are too high, you can take steps to lower them. If you are running under the budget, you can pour more money into it (if you wish), or congratulate yourself on holding down the costs!

How can you secure these standard ratios against which to compare your expense figures? Chambers of Commerce are fruitful sources of business statistics. The colleges of commerce of the various state universities are usually glad to help you secure operating cost data.

There is one final thing that the profit - and - loss statement should show. It is not applicable to every concrete manufacturer, hence it is not always used. This final factor is *other business income.*

What is *other business income?* It might be any of several things. Your firm may own property in the company name rather than in its owner's, and this property might produce income in the form of rentals. This is one example of what accountants term "other business income".

Again, your company might hold some United States government bonds, or the bonds of other government governmental bodies, or even private company bonds. The company may even own stock in other corporations. The dividends from this stock and the interest paid on the bonds is other business income.

The profit - and - loss statement classification of other business income embraces any source of money other than the regular sources for which your business was set up. Any funds it gathers in other ways is considered other business income on the profit-and-loss statement.

There is a reason why bookkeepers and accountants draw this fine line, insisting upon separate marking of other incomes rather than lumping them in with the direct receipts. If the profit-and-loss statement is to perform efficiently one of its major jobs—telling you how your business is going, where it is going, and why—then the lumping of unrelated money in with the direct receipt figures tends to give a false picture of the trend of the business.

In a well set up and well planned profit-and-loss statement, you have a very accurate and very sensitive indicator of the health of your company. When things are wacky, it tells you by flashing a red warning light as noticeable as the fever mark on the thermometer. It's a good morale builder when you are doing well, however; it reaches out to pat you on the back and say, "Your business is in fine shape now, Mr. Concrete Manufacturer." And it is a very necessary business tool.

Arizona Firm Constructing New Block Plant in California

Gilbert E. Olson, vice-president of the Builder's Supply Company of Arizona, has announced that construction will begin at once on a block plant at Calipatria, Calif. This plant is to be even larger than the one in operation at Phoenix, said to be the biggest of its kind in the world. The five-year-old Phoenix plant has a daily capacity of 18,000 units, in addition to an extensive brick output. The move to build a plant at Calipatria was made to supply a steadily growing demand for pumice units in the coastal area.

Incorporated as the Superlite Corporation in California, the firm is mining, processing and shipping pumice to its Phoenix block plant. Within three months 65 cars of the processed material had been shipped. Raw material is obtained from "Pumice Hill," located on a 640-acre tract leased from the Imperial Irrigation District. The supply of pumice is said to be unlimited. The processing plant at Calipatria represents a $50,000 investment. Production at "Pumice Hill," currently 20 cars per day, stated Mr. Olson, will be increased rapidly.

All types and sizes of blocks and bricks will be manufactured at the new facilities. The company is owned by Mr. Olson, Paul Thomas (president), and Roger C. Thomas (secretary).

The Kerman Concrete Company of Kerman, Calif., formerly owned by E. E. Schafer, was recently sold to George Frehling of Fresno. The change in ownership was effected in April.

• Some 50,000 visitors at the First Virginia Industrial Exposition, held at Richmond from May 9 to 21, saw this attractive display of lightweight concrete masonry units. The exhibitor was the Southern Lightweight Aggregate Corp. of Richmond, which produces Solite expanded shale aggregate. Included in the display were two walls of Solite masonry units. The third wall on the left side of the picture was constructed of monolithic Solite concrete. The unpainted section was rubbed to expose the aggregate. Visitors at the exposition also saw the Portland Cement Association's excellent movies on concrete masonry and tilt-up construction.

Why Can't I Get a Window That Fits Concrete Block?

THIS question is being asked more and more frequently as concrete block and metal windows increase in popularity for all types of construction.

By WILLIAM A. NOGGLE
Besser Manufacturing Co.

Co-related sizes of building materials, known to the trade as modular coordination, have gone a long ways toward answering the demand for economical construction, but, unfortunately for the average man, we as manufacturers have not gone far enough.

His demands today call for a building of modern design and pleasing appearance. It must be fire safe, vermin and rodent proof, with modern temperature control, yet he is forced to stay within the low cost bracket, for his construction dollars are definitely limited. He cannot afford the full services of an architect, he cannot afford to employ a contractor, but his housing problem is none the less important.

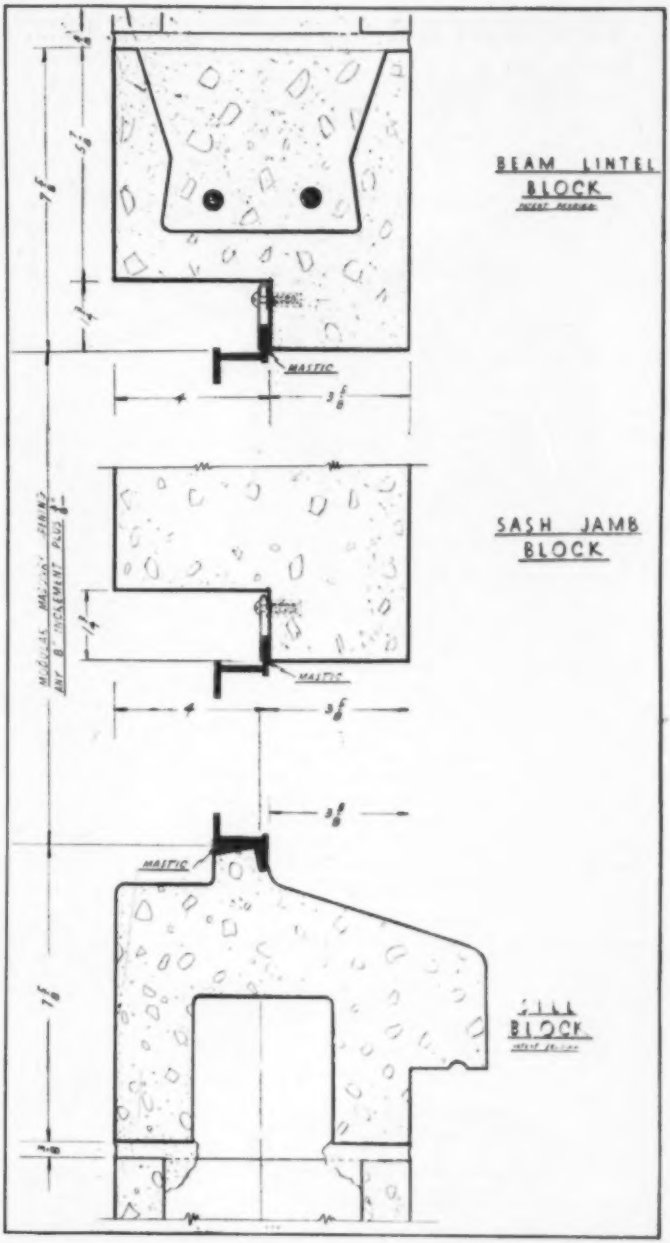
Taken by and large he is the builder of hundreds of thousands of buildings of various types throughout the country every year, and when we consider him from this point of view he becomes a very important customer.

His usual method of operation is to select the picture of a building that suits his needs from some trade magazine or household periodical, hire a local tradesman to do the work, and then proceed to act as his own purchasing agent.

He is forced to depend on the advice of his tradesman, his local supply dealer, and upon what little meat he is able to pick from a maze of technical figures and terminologies he finds in data supplied him through various sources. If his building happens to be of concrete block, which is very often the case, he eventually discovers the importance of modular coordination, for he soon runs into trouble.

His concrete block lay-up in 8-in. increments, and he is supplied with full and half blocks, but when he starts to lay out his window openings in the wall he discovers that concrete block and metal windows are not related in either width or height, and here is where he asks the question: "Why can't I get a window that fits concrete block?"

He is not familiar with what we call modular coordination, but he has come face to face with a situation where it should apply, and he is at a loss to know what corrective measures should be taken. He must do something, so he resorts to various and sundry methods, such as cutting his blocks or trying to put in a filler. In this process he destroys the joint pattern; since the results do not compliment the windows or the block, he



●Design for sash-jamb, beam lintel, and sill blocks which will help achieve full modular coordination between masonry units and windows.

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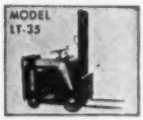

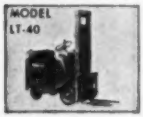

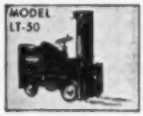

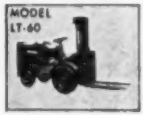

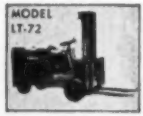

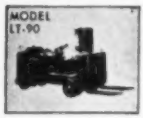

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THE ONE-MAN-GANG

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is extremely dissatisfied.

To the skilled architect and contractor, modular coordination is a very desirable development, but the lack of it is not a serious handicap, for their technical skill permits them to take corrective measures that are beyond the conception of the average man.

Correction of sizes to meet this demand is definitely in the hands of the manufacturers. Windows must be made that will relate to 8-in. increments plus one mortar joint, if we want to satisfy the customers, compliment our product and increase our volume of sales.

For over a year engineers of the Besser Manufacturing Co. have been studying metal windows as related to concrete block construction. As an outgrowth of these studies they have developed designs for sash-jamb, beam-lintel, and sill blocks (see cut) which, it is believed, will go far toward achieving full modular-coordination between masonry units and windows. The Steel Window Institute, the Association of Aluminum Window Manufacturers, and various window manufacturing companies, have cooperated in this important undertaking.

The designs are based on masonry openings that will permit the installation of windows after the masonry work has been completed. The beam lintel block eliminates the necessity for angle iron or formed lintels, and permits a constant block pattern in the wall face.

A cutout and set-back in the jamb block makes for easy installation of windows, and permits a variety of interior finishes. The cutout is coordinated to provide for all types of windows.

In the bottom of the sill block a recess is provided to permit sawing the bottom of the unit to fit windows that are not modular in height. A 16-degree angle on the face of the projection at the top of the block facilitates installation of steel windows after masonry work has been completed.

A drip groove is provided in the sill block to eliminate streaking and staining of the block wall below the sill, and there is a cutout at the top (inside) to permit installation of wood, marble, tile or structural glass sills. The projection on the top of the sill block may be sawed to permit the use of wood frames, glass block or insulated glass.

Strength of Pipe

(*From page* 210)

two critical points, the 0.01-in. crack load and the ultimate load were recorded. The 0.01-in. crack is a crack which appears on one of the tension faces of the pipe during the loading. Usually it is said to be a 0.01-in. crack when a gauge 0.01 in. thick and 1/16 in. wide at the point and tapering back to ½ in. at the rate of ¼ in. per inch is inserted into the crack to a depth of 1/16 in. throughout a distance of one foot.

Conclusions

Study of the data obtained by these tests has brought forth the following conclusions:

1. A revision in the required load

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specifications is indicated especially for the Three-Edge ultimate load.

2. The two test loading conditions do not stress the pipe in the same manner as do the actual loading conditions in the field. The types of failure, particularly in the Three-Edge method, do not simulate those found in field conditions. This is due to the fact that the steel is placed to resist field conditions and not test conditions.

3. A precise method of placing the steel reinforcement and ascertaining that the steel reinforcement remains in position while the concrete is poured would give more uniform results. Special care should be given to place the sections of welded ends of reinforcing steel at a ⅛ point of the pipe. If this point is placed near a ¼ point, tension failure of steel frequently results.

4. The strength of the concrete does not seem to be a major factor in determining the strength of the pipe. The average strength of the concrete used in these tests was 4,325 pounds p.s.i.

5. The tests indicate that the ratios of ultimate strength by the Sand Bearing method to that by the Three-Edge method becomes substantially greater with an increasing pipe diameter than the commonly accepted value of 1 to 1.50. A value on the order of 1. to 2.0 is indicated for this ratio of pipe of 72-in. diameter.

6. The types of failure encountered in these tests indicate a need for further study of a concrete design which could include: (a.) change in amount of reinforcing; (b.) change in wire diameter; (c.) change in the spacing of the wires in the mesh; and (d.) inclusion of anchor wires to keep the mesh from lifting and spalling off the concrete.

7. Large concrete culvert pipes should be considered as flexible structures using the passive pressures of the soil at the sides to help carry the overburden. As flexible structures, they may deflect and crack but cracking is of no serious consequence.

8. Load factors, based on the Three-Edge test, used for design of culvert pipes for actual locations should be reviewed and revised.

The Humboldt (Iowa) Cement Block Company, owned and operated by Nick Albus and Lester Naeve, recently installed facilities for steam curing in an addition to their plant.

yes, you can
Buy or Lease
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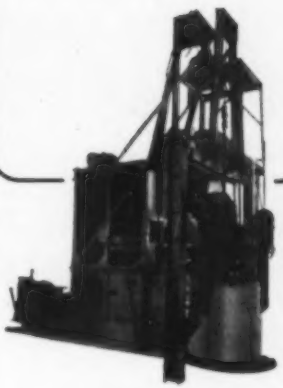

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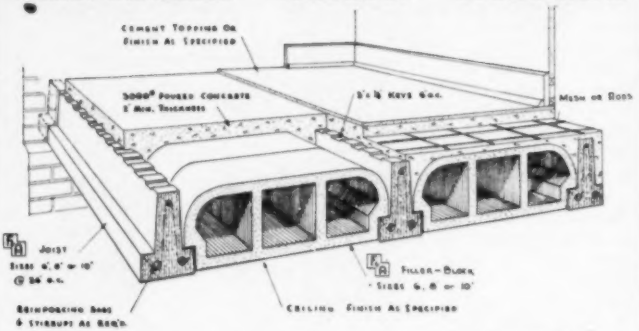
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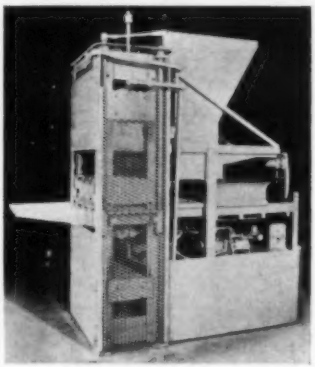
● Pneumatic Block Machine

The "Van-U-Matic Blockmaker," manufactured by Van Ornum Co., 344 Haddon Ave., Westmont, N. J., is a pneumatic, semi-automatic block machine,



using plain, uncored pallets. It is furnished with a Gardner Denver air compressor, having a capacity of 40 cu. ft. of air per min., an 81-gal. air tank, and a 10-hp. motor.

The machine is operated by 3 valve station controls and a single foot valve vibration control. Blocks are moved from the machine to the tracks by a pneumatic-powered offbearer operated by controls on the handles. This offbearer has a 10-ft. beam, with 10 ft. of travel on the beam, and has a transverse of 180 deg. Each cycle of operation will produce true dimensional, cored or solid blocks, the number being determined by the mold-box. Vibration is effected by 4 pneumatic vibrators.

The Van-U-Matic, which contains a self-oiling unit, makes two 8- by 8- by 16-in. blocks or 8- by 8- by 18-in. blocks or their equivalent on each cycle.

● Self-Aligning Block

The Norris Block Company has engineered and designed the Norris Self-O-Line block to meet the demand for quality low-cost construction. Savings of upwards of 35 percent are achieved by the use of the Norris block and Norizing method, according to the manufacturer.

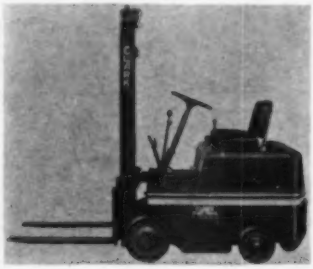
The blocks are laid up dry at a rapid rate, then the joints are bonded pneumatically, and the waterproof finish is applied in various textures and colors with the beauty and appearance of cement stucco. This is done in one operation at a cost approximately the same as two coats of cement paint. This finish may also be used for the interior in many areas.

The interlocking and arched design make for greater strength and durability

as well as producing a two-face wall. Savings are also realized on the installation of utility lines as the block produces an unobstructed pipe chase. There is no work stoppage due to weather conditions as the blocks can be put in place, the structure closed, and the mortar work done when weather permits. Walls of Norris Self-O-Line block can be reinforced horizontally and vertically in areas where necessary. Norris Block Company, 4. S. Fifteenth St., Philadelphia, Pa.

● Gas-Powered Lift Truck

The Industrial Truck Division of the Clark Equipment Company, Battle Creek, Mich., has redesigned its gas powered Clark "Clipper" fork-lift truck. The new



lift truck has a capacity of 2000 lbs., with the loading center at 24 in. from the heel of the forks. The truck's wheelbase is 36 in.

The manufacturer claims that grades of as much as 15 percent can be climbed without difficulty. Mechanical improvements include a new engine with 30 percent higher brake horsepower and increased torque and a new and improved oil sump and valve for operating hydraulic equipment.

● Drain Tile Machine

The Tilemaster, manufactured by Drain Tile Machine, Inc., 406 Luckie St., N. W., Atlanta, Ga., is capable of producing 500 ft. of drain tile per hr. Constructed of 7/16-in. steel, it is electrically welded throughout. Over-all dimensions are 6 ft. wide, by 7 ft. high, by 4 ft. in depth.

In the operation of the machine, forming cans are placed in position between two plates. When air pressure is applied, the plates, with cans held securely between them, move upward. When the top plate reaches the lip of the hopper a workman fills the forming cans with the proper mixture. Air pressure is again applied and the process is reversed. On the downward movement, revolving cutters pack the mixture against the sides of the forming cans, thereby producing a centrifugally packed, well formed tile.

The Stearns Manufacturing Company announces that Stearns mixer users can now obtain Ni-Hard blades for their mixers. Ni-Hard is a hard, abrasion-resistant nickel-chrome alloy.

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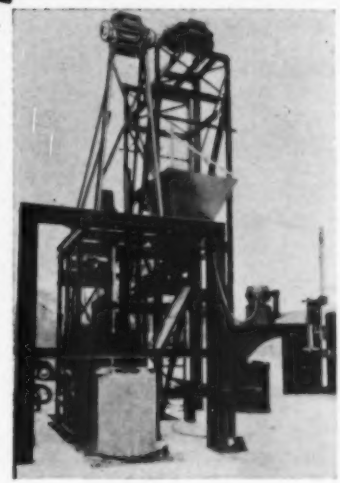
for ECONOMICAL PRODUCTION



High Efficiency
CONCRETE PIPE MACHINE
featuring

- Quality product meeting A.S.T.M. specifications
- Rugged construction
- Power driven tampers
- Easy take-off of pipe
- Makes pipe sizes 6" through 60"

There's a profitable market in your locality for high quality concrete pipe moulded in a CONTINENTAL 60 Pipe Machine.

This is a high-output unit, finely engineered and durably built for continuous, low-cost operation.

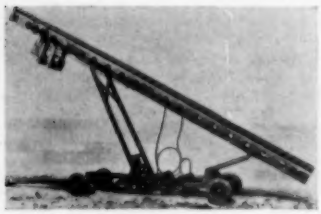
CONTINENTAL provides a complete line of accessories and cast equipment for making concrete pipe.

MAIL COUPON TODAY
for descriptive literature and price
CONTINENTAL CONCRETE PIPE & EQUIPMENT CO.
1899 W. Goodale St., P. O. Box 1484, Columbus 16, Ohio
NAME .....
COMPANY .....
ADDRESS .....
CITY ..... STATE .....

● Hydraulic Conveyor Control

Lake Shore Engineering Company, Iron Mountain, Mich., has announced that its lightweight, portable, "Tote-All" belt conveyors are now available, if desired, with hydraulically-controlled belt and mounted on a new hydraulically-controlled "Duo-Lift" frame. The hydraulic system is powered with either an electric motor or a gasoline engine.

Hydraulic control of the belt speed permits reversing action of the belt and a range of speeds from 0 to 400 f.p.m. The hydraulically-controlled Duo-Lift



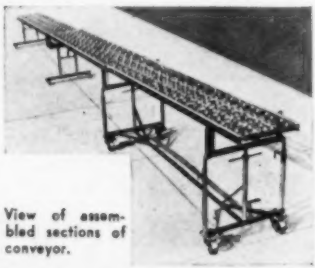
frame mounted on four wheels with 4.00 by 8 pneumatic tires permits a wide variety of positions for the conveyor. Height of the low end of the conveyor can be adjusted from 20 in. to 48 in. and the high end from 48 in. to 15 ft., depending upon conveyor length. The Duo-Lift frame is equipped with a tow bar so that the unit may be easily pulled by hand or vehicle.

Standard conveyors are available in lengths from 10 ft. up in multiples of 2 ft. and with belt widths of 8, 10 and 16 inches. Special lengths and widths can be manufactured to order.

● Telescopic Conveyor

The Wilkie Company, 1104 Packard Building, Philadelphia, Pa., has improved its portable telescopic conveyor so as to assure an even ride for the load. The 5-, 7½- or 10-ft. sections which make up the conveyor lock together when fully extended so that there is no step-down between sections. The locking arrangement is automatic and assures correct positioning of the sections. No bolts or clamps are needed.

This conveyor is made in either wheel or roller types and is said to eliminate the 10- to 40-ft. manual carrying which so often accompanies the loading or unloading of trucks.



View of assembled sections of conveyor.

DRY WALLS

Interior or Exterior
Above or Below Grade

Eliminate costly guess work in solving wet wall problems. Seal and beautify porous walls of concrete block, tile, stucco, etc., with Spray-O-Bond Concrete Sealer. It's easy to apply — almost like brushing on paint. Used successfully by contractors for over 20 years. A post card will bring you the name of your nearest dealer.

SPRAY-O-BOND COMPANY
2225 N. Humboldt
Milwaukee 12, Wis.

spray-O-bond

ROBINSON
BIG SAVINGS POSSIBLE
Air-Activated
in Handling Bulk Cement
CONVEYOR

Is your cement storage bin 50 feet or more from the siding? Are there any obstructions between storage and siding regardless of distance to make mechanical handling impractical?

Look into the merits of the Robinson Air-Activated Conveyor. With it, you can get shipments in hopper bottom cars; unload each car in two hours or so; and operate season after season without heavy maintenance. Pipes do not clog because the cement does not encrust. There are no continuously moving parts, screw feeds, bearings, etc., that so frequently cause shut-downs and maintenance.

If you wish to save in costs for handling your bulk cement, investigate the Robinson System. Write to us.

Division of
MORSE BOULGER DESTRUCTOR CO.

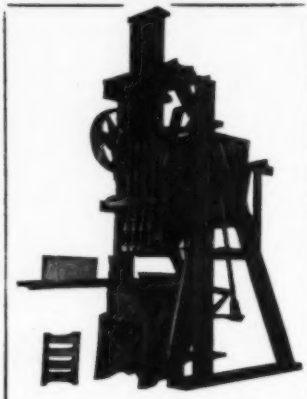
ROBINSON Air-Activated CONVEYOR SYSTEMS

Representatives in Principal Cities

211-G EAST 42nd STREET • NEW YORK 17, N. Y.

Represented in England by Blaw-Knox, Ltd., London

Represented in the French Union and Benelux by Cie Francaise Blaw-Knox, Paris



An All-Purpose Machine

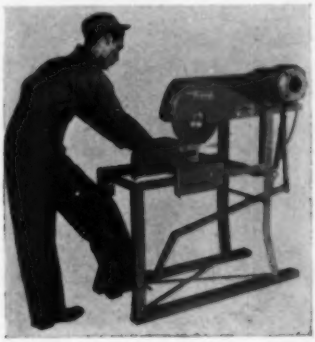
The Junior Stripper will turn out more blocks per man than any other hand-operated machine on the market . . . 300 per hour being easily maintained! Nor has quality of output been sacrificed for the sake of speed. Units are uniformly dense, true to shape, of uniform texture.

Stearns Clipper Stripper Machines; Stearns Jolterete Machines; Stearns Mixers; Cast iron and press steel pallets. Straublox oscillating attachments, etc. Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager — Columbus, Ohio

● Masonry Saws

The following are features common to all models of the "Fireproofer" line of masonry saws manufactured by the Martin Fireproofing Corp.; an exclusive patented cutting table for cutting material of varying thickness; "single-unit" operation of all working parts of the blade assembly; angle iron frame; portability.



Called "the world's only dry cutting masonry saw with a built-in dust collector," the Model ADF utilizes two 1½-hp. shielded motors.

The Model WF features wet or dry cutting. For wet cutting it utilizes a self-priming pump and four water jets spraying against the blade, rather than the customary two. It is powered by a totally enclosed, dustproof 1½-hp. motor.

The Model F-14 is a standard type of dry cutting saw with no means of dust suppression. It has a 14-in. blade capacity and a totally enclosed, dustproof 1½-hp. motor. The Model F-12 differs from the F-14 only in the blade capacity, 12 inches, and the motor size, 1 hp.

Fireproofer blades are made for every type of masonry material. Diamond blades are furnished for wet cutting, and there are several types of abrasive blades for both wet and dry cutting. Martin Fireproofing Corp., 2200 Military Rd., Buffalo 17, N. Y.

The T. L. Smith Co. has announced a sales, operating and financial alliance with Essick Manufacturing Co. of Los Angeles, Calif. Bryant Essick, president of Essick Manufacturing Company, has been elected a director of The T. L. Smith Company, and Essick Manufacturing Co. has acquired a substantial block of The T. L. Smith common stock. No change is contemplated in the management or policies of The T. L. Smith Co. and Mr. Essick will be active in the Smith company only in an advisory capacity and as member of the board.

Bryant Essick, president of Essick Manufacturing Company, and Harold E. Smith, president of The T. L. Smith Company, jointly state that there is no intention of consolidating the two firms both of which distribute their equipment nationally through retail machinery distributors.

BUILD RESERVE STORAGE TO MEET CEMENT SHORTAGE!

•

DO IT *with* BUTLER BINS

BUTLER BIN CO.
WAUKESHA, WISCONSIN

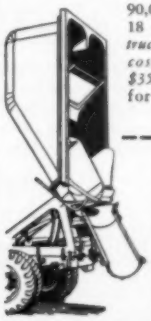
...and every yard costs less to deliver at South Bend plant

Keep your eye on South Bend, Indiana if you want to learn about a real low-cost ready-mix operation. Talk to D. C. Hay of Kuert Concrete about central mixing, air entrained concrete and Dumpcretes.

Hay hauled his last year's 90,000-yard production in 18 Dumpcretes. *Including trucks, each Dumpcrete unit cost an average of only $3500.* With no gas and oil for an extra motor, and with almost nothing for repairs, you can see why his delivery cost is low.

These Dumpcretes haul typical ready-mix loads—maybe one to a little fellow who is building his own house, and next to the big contractor who watches his concrete like a hawk. But every load is uniform, top-quality concrete that will meet the toughest specifications.

Mail the coupon today for *new* Dumpcrete booklet and details of this successful operation.



The lower cost Dumpcrete is lightweight, watertight, with 13-foot chute, centralized higher discharge and lower center of gravity. Hauls sand, gravel, and coal too. Available in 2, 3, and 4 yard sizes.

Please send NEW Dumpcrete booklet

Name_____

Firm_____

Address_____

DUMPCRETE

DIVISION, NAXON CONSTRUCTION CO., INC.

555 Talbott Bldg., Dayton 2, Ohio

Profitable Production

OF CAVITY WALL BLOCKS*

With The

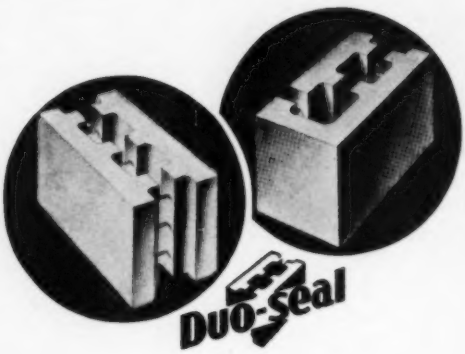
SUTTER

Model 49

BLOCK MACHINE

RUGGED IN CONSTRUCTION — SIMPLE IN DESIGN
The Model 49 Sutter Block Machine is intended to meet the demand for low-cost, power operated equipment for the manufacture of concrete masonry units.

Sound basic engineering and extensive production tests have resulted in a machine that effectively combines vibration, compaction and troweling. These three desirable actions, all necessary to produce strong, clean masonry units, assure a uniform block each time a machine cycle is completed.



Pat. Pend.

Check These Features:

- Quick-change core box—five minutes and you're ready for a different shaped block.
- Co-axial strut — one self-contained hydraulic unit for compaction and stripping.
- Quality control with triple action: Vibration, compaction, troweling.
- Long life construction—welded steel frame, reinforced at wear points.
- Simple finger-tip operation with positive hydraulic action.
- Handles light or heavy aggregates with equal efficiency.

Write today for complete information and prices on the Sutter Model 49 Block Machine.

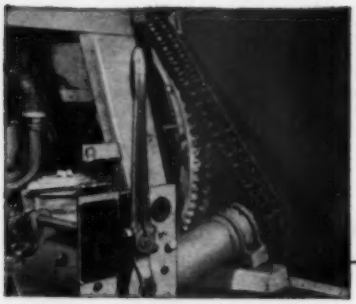
*** THE NEW DUO-SEAL CAVITY WALL BUILDING BLOCK is made exclusively on the Model 49 Sutter Block Machine.**

The Duo-Seal Block meets the need for a modular unit to produce a wall that is free from moisture conducting connections between the inner and outer walls. With Duo-Seal construction, plaster may be applied directly to the block without the usual costly method of furring and plaster lath.

MANUFACTURERS LICENSE AVAILABLE TO COMPETENT CONCRETE MANUFACTURERS

H. R. SUTTER Company

661 WYOMING AVE. **BUFFALO 15, N. Y.**



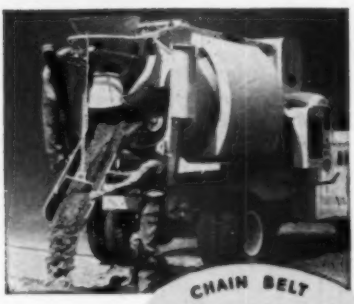
THE CHAIN TAKES THE STRAIN

The exclusive Rex chain drum drive eliminates stresses and strains: The chain protects transmission . . . gears . . . shafting . . . power plant. It eliminates binding between drum and transmission as the truck chassis weaves over uneven ground. The chain effectively dampens vibration, assuring far less driver fatigue.

Life-Saver
Cost-Saver
Time-Saver
REX
Hi-Discharge
Moto-Mixer

Lower Maintenance and Operating Cost

The Rex drum drive is a weight-saver. It eliminates the need of bulky, excessively heavy transmission cases, shafting, bearings, etc. This saving in weight here permits Rex to build added strength into parts where it is really needed . . . blades, drum rollers, drum shell and drum support. Here's why Rex gives you lower maintenance costs and assures less lost operating time.



Time-Saving, Fast Discharge

You'll save minutes every batch with Rex Moto-Mixers. Since Rex mixes in the discharge direction, the batch is always right up at the opening . . . ready to come out in a hurry. Deep spiral scoops speed the batch out *fast!* Remember, it's at the job site where speed is important to avoid holding up your customer's schedules.

For all the facts, see your Rex Distributor or write for Bulletin No. 468, Chain Belt Company of Milwaukee, 1604 W. Bruce St., Milwaukee 4, Wis.

CHAIN BELT REX COMPANY

CONSTRUCTION MACHINERY

Moto-Mixers • Moto-Agitators

Color in Concrete

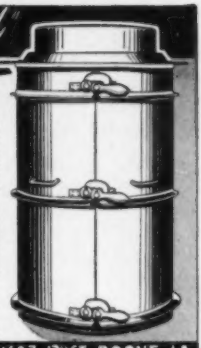
The easily dispersible, non-floating, permanent, qualities of these extra strong colors produce intense shades in concrete.

Special blends in ton lots at no additional charge. Working samples furnished.

629 W. Washington Blvd. Chicago, Illinois — **1261 Broadway New York, 1 N. Y.**

MINERAL PIGMENTS CORP., MUIRKIRK, MD.

THE "Quinn Standard" FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IA

CONCRETE MANUFACTURER USED EQUIPMENT SECTION

FOR SALE
MODERN CONCRETE BLOCK & BRICK PLANT

Located in the expanding South. Production 3,600 8" units per eight hour day. All modern equipment. Local raw material available. Adequate space for operation & expansion, now doing an increasing volume of business. Price $70,000.

Box No. H 2, c/o Pit & Quarry Publications
538 So. Clark St., Chicago 5, Illinois

FOR SALE
BLATT BLOCK MACHINERY

1—Tamping Machine, cap. 4-5 per min.
1—1 bag mixer with motor
1—20 ft. conveyor with motor & belt
1—Water control vent
1—1 Batch Hopper
Approx. 1500 cast steel pallets—15⅝ x 7⅝ square cord — 45% air space
10 steel racks — some wood racks, fair cond. All eqt. new late in 1945. Used very little.
Price $2,000.00

ROOF COATING — CHEAP

40 — 5 gal. cans — 3 — 18 gal.
1 — 30 gal. drum — 2 — 55 gal.
Total — 394 gal. $195.00

Write or call: G. L. BERSHEIMER
Route 3 Phone 37F12 Franklin, Indiana

PACKER-HEAD WINGS

McCracken Type — PROVED to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

Kirkham Vibrator Block Machine with mixer complete, also pallets and two lift trucks. Machine used only 3 weeks. Price of entire outfit $2800.00 F.O.B. Trumansburg, New York.

MILLSPAUGH BROS.
Trumansburg, New York

PRICED FOR SALE

Used Lewis Sheppard truck, bed 25" x 54" with Iron Wheels and roller bearings. FOB Indianapolis, Indiana. $100.00

Used Lewis-Sheppard Truck, bed 24" x 72" with rubber tired wheels, roller bearings and springs. FOB Indianapolis. $175.00

The above trucks are in dandy condition.

R. S. GEYER
876 Mass. Ave. Indianapolis, Ind.

1—Jaeger 3 yd. Model HC Hi-dump truck mixer, excellent condition $2300.00

1—Jaeger 2 yd. Model TC truck mixer mounted GMC Model 400 truck $2000.00

1—Jaeger 2 yd. Model TC truck mixer mounted on 1946 Ford truck $1750.00

2—Smith 2 yd. Hi dump truck mixers new in 1946 mounted on 1940 Federal trucks $3800.00

1—Jaeger model CS-20 Concrete spreader (new) $5000.00

THE LORENZ EQUIPMENT CO.
547 WEST RICH STREET
COLUMBUS 8, OHIO

FOR SALE

Two Graveley 2 block machines, two hoppers, two off-bearers, 700 3 core Barker steel pallets, various attachments, above in good operation. $995.00 or trade for power lift truck or dump truck.

Capacity of above 600 regular blocks per hour.

LYNCHES CONCRETE BLOCKS, INC.
Phone 5808
Battleboro, North Carolina

1—3-Compartment aggregate Bin
1—Vertical enclosed Elevator 53 ft.
1—One cubic yard Johnson Batcher
1—Stearns Clipper Block Machine
1—Pallet Oiler
12", 8", 6", 4" & 3" Steel Cored pallets
91—Steel block Racks

Priced for quick sale

NEW HOLLAND CONCRETE PRODUCTS, INC.
New Holland, Pennsylvania

FOR SALE

1—two unit George Super Vibrator block machine
1—self feeder hopper
All attachments for 8x8x16, 8x8x8, 4x8x16, 4x4x8, 8x4x16 and all other sizes up to 12 designs.
1—1 bag mixer with 5 H.P. motor
1—belt conveyor with 1-h.p. motor
3000 steel pallets
2—hydraulic lift trucks
44—steel racks 48 block cap.
1-h.p. motor
1—80 gas burner boiler
All in good shape—complete for $3000.

TIP TOP CONCRETE PRODUCTS COMPANY
P. O. Box 35
320 Missouri Street Pine Bluff, Arkansas

Contractors Hoist for Pouring Concrete

Complete with 5 h.p. motor, winch, ½" cable, adjustable steel dumping hopper with gate, 18 c.f. bucket. Automatic Controls: Limit switch, magnetic switch (up, down, stop) three button station. Ht. of tower 25' dumping. Dumping position adjustable to any height. Speed 50 ft. per minute. Complete and ready to go. Price $1500. F.O.B. Wichita, Kansas. Purchased for use on one large private job. Reason for sale—no further use. **Old Mission Mausoleum, 21st & Hillside, Wichita, Kansas.**

FOR SALE
CONCRETE BLOCK PLANT

Equipped with two machines, less than six months old. Complete with mixer, racks, pallets, conveyor and spare parts. Machine in operation every day, a good going business. Block building, with 4400 sq. ft. of floor space. Located in Southern part of Indiana. Price $12,000 complete—a very good buy.

Box No. G 7, c/o Pit & Quarry Publications
538 So. Clark St. Chicago 5, Illinois

Concrete Manufacturer Used Equipment Section

Advertising rate per issue: $10.00 a column inch. 10% discount for 4 consecutive issues. (Lower rates on a contract basis.) New advertisements received by July 15th will appear in the August issue.

BLOCK MACHINES FOR SALE

Six Clipper Strippers — $1500.00 each.

All guaranteed to be in first class condition. Thousands of steel and cast-iron, cored pallets.

Universal Concrete Pipe Co.
Telephone Main 3313
297 S. High St., Columbus 15, Ohio

CEMENT COLORS — PROMPT SHIPMENTS

Write for samples and prices of "LANSCO" CEMENT COLORS in bright shades of RED, YELLOW, GREEN, BLUE, BLACK, BROWN. Manufactured by

LANDERS-SEGAL COLOR CO.
76 Delevan Street, Brooklyn 31, N. Y.

If you want to

CLEAN YOUR PALLETS,

Write to **BERGEN MACHINE & TOOL Co., Inc., 189 FRANKLIN AVE., NUTLEY 10, N. J.** *for Free Literature describing the* **AUTOMATIC MACHINE** *which cleans an* **18½x26" plain pallet in 12 seconds.**

FOR SALE

Late '46 STEARNS Clipper, loader, mixer; pallets, racks, truck, misc. All exc. cond. Clipper priced $1250; rest at similarly low prices. For further information write

Box H 7, c/o Pit and Quarry Publications
538 So. Clark Street **Chicago 5, Illinois**

UNBREAKABLE PALLET RINGS

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

1—rebuilt K3 Besser Tamper
Making two 8" blocks at one time. Complete with air hoist, pallets, mold boxes and parts.

Box No. G 6, c/o Pit & Quarry Publications
538 So. Clark Street, Chicago 5, Illinois

FOR SALE

1 Stearns Skip Hoist with re-conditioned motor, was used with No. 7 Joltcrete, Stearns.

Contact: NAZARETH BUILDING BLOCK PLANT
RD No. 1, Nazareth, Pennsylvania
Phone 616, Nazareth, Pennsylvania

FOR SALE OR LEASE

Modern concrete block plant, a going business. City about 10,000 pop. Excellent opportunity for builders supply business in connection. Require about $6,000 cash down. **Inquire Hoag Lumber Co., Springport, Michigan.**

We offer the following used equipment for sale:

1 Model A Stearns Clipper Stripper Block Machine complete with all necessary motors, switches, etc., with complete attachments and mold boxes for making 4", 6", 8" and 12" block. All in excellent condition $1500.00
or best offer

•

1 Miles Plain Pallet Block Machine with conveyor and 18' Stearns Mixer, complete with all necessary motors and attachments for making 4", 8" and 12" block. $1500.00

3 No. 7 Joltcrete Block Machines, complete with all necessary motors, switches, etc. ..$2250.00 each

1 No. 9 Joltcrete (new machine guarantee) Installed $6500.00

1 SYNTRO-PAC Model B Block Machine, complete with 4" and 8" pressed steel pallets.
(Prices upon request)

METROPOLITAN EQUIPMENT COMPANY
P. O. Box 4463 **Washington 17, D. C.**
(Distributor for The Gene Olsen Corp.)

FOR SALE
BARGAIN PRICE

Almost new J-C six pocket Brick Press, complete with motor and starter. 12 cu. ft. Jay Bee batch mixer, complete with motor and starter. Almost new Erickson special high lift truck, 2½ ton capacity. 2 35' C-C bucket elevators, complete with motor and starter. 2,000 wooden brick platforms. Can be seen in operation at any time requested. Will sell complete outfit for $5,000.00.

STOKESLAND BRICK AND LUMBER COMPANY
Rt. 1 **Danville, Va.**

HELP WANTED

Position open immediately in Shreveport, Louisiana for truck dispatcher in building materials and ready-mixed concrete house. Must be familiar with different types of building materials. Requirements: high school education, energetic, honest, between age 25-35; willing to work long hours at times, and be able to meet the public. Starting salary based on qualifications. Please answer ad in long hand.

Box No. H9, c/o Pit & Quarry Publications
538 S. Clark St., Chicago 5, Illinois

FOR SALE

Concrete Pipe Forms, Tongue and Groove 18", 24" diameter 3 foot length.

YARDE'S CONCRETE TILE COMPANY
R.R. No. 1 **Garrett, Indiana**
Telephone No. 617R

RACK BARGAIN

39—New, absolutely unused, kept undercover — Chase Style No. 2165 — STEEL RACKS less decks — $16.00 each F.O.B. Morris, Illinois.

Box No. H 4, c/o Pit & Quarry Publications
538 So. Clark St., Chicago 5, Illinois

SALE

FREE

1—Stearns #9 Joltcrete
1—Stearns #7 Joltcrete
1—Stearns Model "A" Clipper Stripper

FREE

1—Stearns Power Tamper
1—Appley "Little Giant"
1—Gravelay Vibrator
1—Kent Tamper & Stripper

FREE

1—Brown Vibrator

(Any of the Above machines FREE to anybody agreeing to buy the pallets)

1—Rexcer 56' mixer	$1500.00
1—Besser 42' mixer	650.00
1—Stearns 18' mixer	550.00
1—Gravelay 25' mixer	200.00
1—Kent (continuous mixer)	
100 steel block racks, each	5.00
1—Kirk & Blum vibrating table	600.00
1—20' belt conveyor	200.00
1—15' belt conveyor	100.00
1—Lewis-Shepperd lift truck	250.00
1—Barret-Craven lift truck	100.00
1—Air off-bearing hoist	200.00
1—Stearns Model "A" mold box	100.00
1—Stearns #7 mold box	100.00
1—Stearns #9 mold box	100.00
1—Swan (face down) block machine	100.00
1—Cusopol block machine	100.00
2—Self-Feed hoppers, each	100.00
1—Cinder Crusher (like new)	600.00

18" x 18" new steel pallets for trade.

WM. H. CHASE (Dealer) 18 LINWOOD AVE.
BUFFALO, (2) New York.

FOR SALE

1—Stearns Clipper Stripper Model A —equipped with 16" and 18" Mold Boxes
2000 8 x 8 x 16 Steel Pallets
1500 4 x 8 x 18 Aluminum Pallets
1000 8 x 8 x 18 Aluminum Pallets
1—28' Cubic foot Batch Mixer
40—Curing Racks
2—Hydraulic Footlift trucks—WHF 11-72
Above equipment 15 months old
1—Bonded 1261C—Crusher fully equipped
1—New Holland 30CV—Pick up vertical elevator 8" buckets—35' long. Complete with motors and vibrating screen
Above equipment 8 months old
Will sell as a complete unit, or separately

LANERI BROS. CO.
6202 Avenue U, Brooklyn 34, N. Y.

FOR SALE

Bird Bath Mold, used
Rustic Jr. Box, used
Grecian Jr. Urn, used
Arcadia Box, used
Pottery

Box 85 **West Berlin, N. J.**

Different... Sensational... WORK THE FIRST DAY AND THEREAFTER

$4300.00! HOW CAN SO LITTLE MONEY BUY SO MUCH! **400** BLOCKS PER HOUR

VAN-U-MATIC BLOCKMAKER

VAN-U-MATIC has ALL the features . . . Pneumatic power operation, vibration and off-bearer . . . Plain pallets (⅓ usual pallet investment) . . . Makes all size blocks, 16" or 18" length . . . Quick, easy changeover . . . True dimensional, Perfect blocks . . . Compact, easy to install and clean . . . We can finance.

Van Ornum Co. Westmont, N. J.

Dept. P, 344 Haddon Ave., Phone COllingswood 5-4767

DEMONSTRATION PLANTS AND REPRESENTATIVES

Tobin Bros. Florence, Mass. — John Haeusser Con. Prod. Buffalo, N. Y. — G. W. Robertson Hillsdale, N. Y. — Wonder Con. Prod. Newton, N. J. — F. H. Yanks Chester, Pa.

Gerald Associates, Inc. Union City, Mich. — Van-U-Matic Sales Co. Woodbridge, N. J. — Northeast Con. Prod. Northeast, Md. — Maysville Con. Prod. Maysville, Ky.

FLEMING
THE OF ST. LOUIS

THE QUALITY NAME IN CONCRETE PRODUCTS PLANT EQUIPMENT

FMC 180

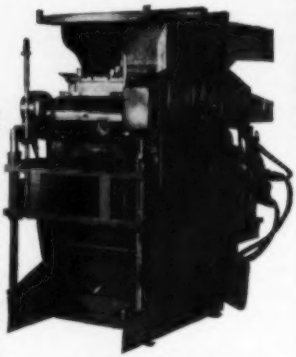
Automatic Concrete Block Machine

CUSTOMERS SAY —

"I still say you should call it the 225 as it turns out that many per hour, day in and day out."
Kingsport, Tennessee

"While you rate them at 180 per hour, we are presently running both machines at a rate of 240 blocks per hour on each. Our total labor cost in the kiln is 1½ cents per block."
Wichita, Kansas

"The timing is positive and not regulated by the operator. But, best of all, the machine is well made."
Independence, Missouri



THE PLAIN PALLET VIBRATOR AT LOW COST!

COMPLETE BLOCK PLANTS ENGINEERED TO YOUR REQUIREMENTS

FLEMING MANUFACTURING CO. INC
COMPLETE CONCRETE BLOCK PLANT EQUIPMENT

4989 FYLER AVE. - - - - ST. LOUIS 9, MO.

Beautify and Protect Porous Masonry with ONE COAT AGRASEAL

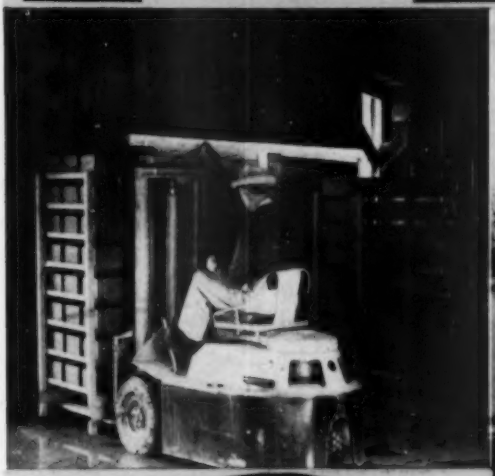
NEW, WATER-REPELLENT BRUSH COAT SEALS PORES OF CONCRETE AND BEAUTIFIES IN ONLY ONE COAT!

- For exterior or interior use on cinder blocks, light-weight aggregate and concrete blocks.
- Better than two or more coats of ordinary cement coatings.
- Fills all voids. No hair checking. No alligator checking. No powdering.
- No expensive equipment needed. Apply with ordinary scrub brush or short bristle paint brush.
- Easy mixing. No lumps. Quickly soluble.
- Easy brushing. Spreads like butter. Cures fast.
- Comes in white and seven beautiful shades of ivory, light buff, grey, cream, green, sunny yellow, brick red. Easy to blend for pastel shades.

Write for details!

TAMMS SILICA COMPANY
228 N. La Salle Street, Chicago 1, Ill.

INSIDE YOUR PLANT...OUTSIDE IN YOUR STORAGE YARD



with a Hyster® "20" LIFT TRUCK

THE SAME TRUCK—the rugged, dependable "little" work horse, the HYSTER "20"—operates EQUALLY AS WELL *inside your plant* AS *outside in your* storage yard.

HEAVY DUTY INDUSTRIAL TYPE PNEUMATIC TIRES give the Hyster "20" greatly increased traction, ramp climbing ability, cut down on floor and paving repair and maintenance costs, make higher truck speeds more practical and safer, are easy on the load and driver—EITHER INDOORS or OUTDOORS.

HYSTER "20" HAS GREATER MANEUVERABILITY because of Hyster's patented turning counterweight around the trunnion mounted rear steer wheel; low center of gravity which increases stability; easier steering, rounded rear end.

THE MOVEMENT OF MORE MATERIALS in crowded areas — EITHER INDOORS OR OUTDOORS is done *quickly, efficiently* with the Hyster "20" (2,000-lb. capacity).

CURRENT DELIVERY . . . See your Hyster distributor. Write for literature.

REASONS WHY HYSTER "20" MOVES MORE MATERIALS...

- ✓ Pneumatic tires.
- ✓ Powerful air-cooled gasoline engine.
- ✓ Maximum operator visibility.
- ✓ Load-Grab — For handling many loads without pallets.
- ✓ Special Load-Grab arms available for handling bales, boxes, bundles, bags, barrels, oil drums — without pallets.

Hyster's 7 models range from 2,000-lb. to 30,000-lb. capacity. All are equipped with pneumatic tires.

HYSTER COMPANY

THREE FACTORIES

2926 N. E. CLACKAMAS STREET...PORTLAND 8, OREGON
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HYSTER

BLAW-KNOX

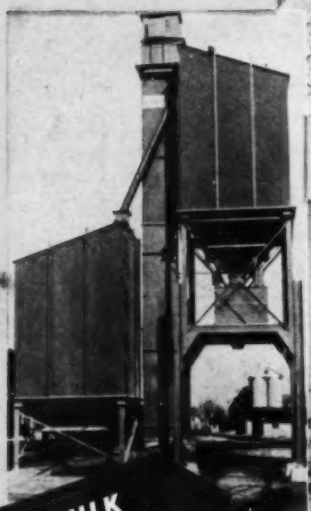
BATCHING PLANTS REALLY CUT CONCRETING COSTS

PORTABLE AGGREGATE BATCHING PLANTS

HERE'S a complete line of portable batching and mixing plants that will keep your fleet of trucks moving all the time. Big capacity for aggregates and cement means there's never any waiting for the crane to catch up or for spotting cement cars for unloading. Twin batchers, and choice of manual or automatic controls for Water Weighing Tanks, electrically operated discharge gates on bulk cement plants are only a few of the features that assure fast, accurate batching.

Capacities of aggregate plants range from 100 to 120 tons in two, three or four-compartment styles, bulk cement plants of 300 and 400 barrel sizes with combination arrangements to double these capacities.

The flexibility and portability of Blaw-Knox batching and mixing plants provide the solution to ready mixed concrete operations, central mixing plants or concrete products manufacturing problems. See your nearest Blaw-Knox distributor for details.



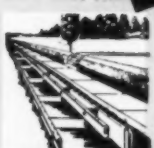
BULK CEMENT PLANTS

CENTRAL MIXING PLANTS

Hi-Boy Trubuilders

Clamshell Buckets

Concrete Buckets



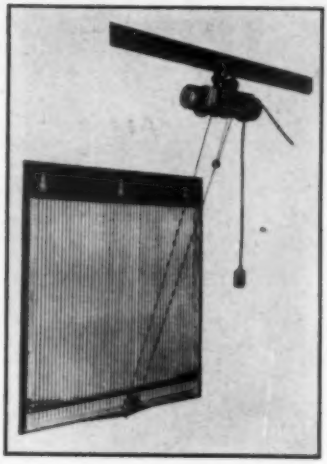
Steel Street Forms

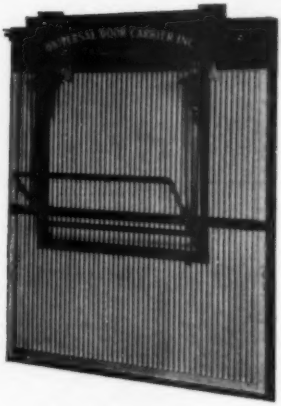
TRUCK MIXER LOADING PLANTS

BLAW-KNOX

BLAW-KNOX DIVISION of Blaw-Knox Company
Farmers Bank Bldg., Pittsburgh 22, Pa.
Birmingham • Chicago • New York • Philadelphia • Washington

HIGH PRODUCTION COSTS?





Above, the hinge type door.

At left, the carrier type door, showing Universal's time-saving carrier equipment.

STEAM LOSS AND SLOW CURING ARE ROBBING YOU OF VALUABLE TIME AND MONEY!

Here's the successful way to close and seal block kilns. The Universal All-metal insulated door, with its unique locking and sealing principles, completely eliminates steam loss and assures complete uniformity in curing of blocks—quicker—easier—and at less cost. This new door is proving itself from day to day—the country over.

Built to your own specifications, the Universal door will fit any width or height opening. Our engineers will handle your complete conversion problem. Write for information or ask our representative to schedule a call.

UNIVERSAL DOOR CARRIER, INC.
1117 CORNELL AVENUE • INDIANAPOLIS, INDIANA

QUALITY comes to the concrete industry...with the HERCULES Aircreter

Model 2-CD: 2-2½ Cu. Yds.* **Model 4-CD: 3-4½ Cu. Yds.***

Authorities agree that *properly* mixed, *properly* delivered and *properly* placed, air entrained concrete is more workable, more plastic, more cohesive and more uniform throughout.

To assure proper delivery and placement of air entrained concrete, the Hercules AIRCRETER, a new-type, non-agitating concrete dump body has been developed. The AIRCRETER, by an (exclusive) ingenious method of *moving the concrete off the bottom first*, overcomes segregation, discharging the load completely, with the concrete of uniform consistency in quality, slump and entrained air.

Thus, low-cost, easy-to-operate AIRCRETERS, which meet all capacity requirements, put within reach of any operator the tremendous profit advantages resulting in the use of air entrained concrete.

*Concrete Capacities

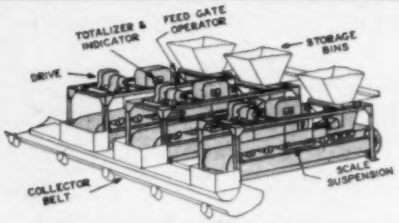
THESE EXCLUSIVE FEATURES ASSURE BETTER DELIVERY OF AIR ENTRAINED CONCRETE

1. Discharge of materials from bottom of the load.
2. Self-supporting Rollaway chute.
3. Discharge angle indicator.
4. Adjustable chuting equipment.
5. Easily accessible throttle and hoist controls.
6. Full rounded body and gate.
7. Adaptable to general purpose trucking.
8. Automatically correlated gate and chute action.
9. 5-to-1 action Hi Pressure Gate.
10. Insulated body at bottom and lower sides.
11. Constant point of high discharge.
12. Heavy duty Aircreter Hoist.

WRITE FOR VALUABLE, AUTHORITATIVE LITERATURE ON CENTRAL MIXING PLANT OPERATION . . . *FREE*

Get this series of articles on Air Entrained Concrete, Central Mixing Plant Operation and Delivery of Materials, written by Mr. J. A. Nicholson, an outstanding authority on concrete and president of the Nicholson Concrete Company, Toledo, Ohio. These articles present an honest analysis of the most discussed question in the concrete industry today—the pros and cons of air entrainment and the profit possibilities thereof.

Hercules
STEEL PRODUCTS CORP., GALION, OHIO
Fertilizer Spreaders • Semi-Trailer Bodies • Garbage Bodies
Contractor Dump Bodies • Low Mount Bodies • Hydraulic Hoists
Coal Bodies • Power Chutes • Load-N-Gates • Concrete Bodies



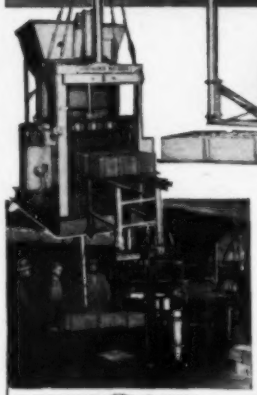
AUTOMATIC CONTINUOUS WEIGHING AND PROPORTIONING

Transportofeeders differ from conventional weight feeders; they are actual automatic, continuous weighing and integrating machines. Transportofeeders automatically and continuously transport, weigh, indicate instantaneous tonnage rate; integrate, totalize the tonnage; and maintain a preset rate of feed to primary grinding mills or proportion several materials with continuous tonnage records of each.

SINTERING MACHINERY CORP.
TRANSPORTOMETER DIVISION
70 Pine Street — New York 5, N. Y.
In Canada
1477 Sherbrooke Street, West, Montreal 25

OVER 7,000 BLOCK Per Day AUTOMATICALLY PRODUCED

FOR LESS Than 1¼¢ Per Block LABOR COSTS



Mr. Howard E. Johnston of the Franklin Concrete, Inc., of Franklin, Tenn., recently wrote us an enthusiastic letter.

Excerpts of this letter are as follows:

"The past week we produced 39,038 8" x 8" x 16" units in 5½ days one shift, or over 7000 per day. Our labor cost was .0121 cents per block."

"We feel our greatest gain is 100% improvement in our product."

If you are interested in similar production records we invite you to write us at once for full details—others have profited greatly through just a post card.

LITH-I-BAR CO., Dept. P-7, Holland, Mich.

LITH-I-BLOCK Machine

CONCRETE POSTS

Money Making Manufacturing Opportunity

Today's unlimited demand for a everlasting fence post opens a new opportunity for the concrete manufacturing industry as an addition to their regular line.

This is truly an all purpose machine, producing two posts at a time with a variety of sizes to choose from, and lengths up to seven and one-half feet. Variable spacing of holes for wire fasteners.

You can also produce lintels, coping, stepping stones and concrete slabs all on this one machine.

This machine is all-steel, vibrating type, with self aligning ball bearings and motor furnished.

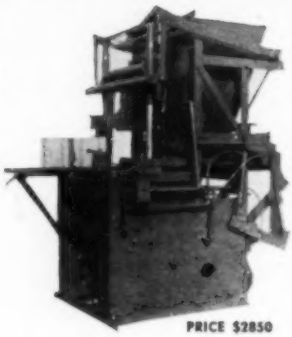
Two men can produce two hundred posts a day, at a cost that will show a greater return on your investment, than any concrete products now on the market. $395.00 Less Molds.

TENNESSEE MANUFACTURING COMPANY
GREENEVILLE, TENNESSEE

PRASCHAK AUTOMATIC

HYDRAULIC BLOCK MACHINE

CENTERED VIBRATION
+
POWER TAMPER
=
DENSE BLOCKS
•



PRICE $2850

Two other models to choose from.

MIXERS, SILO STAVE MACHINES, LIFT TRUCKS, CONVEYORS, CINDER CRUSHERS, CUP ELEVATORS, ROTARY SCREENS.

SAVE UP TO 50% ON INVESTMENT

PRASCHAK MACHINE CO.
MARSHFIELD WISCONSIN

LINTELATOR BUSINESS is *PLUS* BUSINESS

Write for Illustrated Bulletin

Batch Mixers—
Continuous Mixers—
Strippers—
Tampers—
Feeders—
Unloaders—
Elevators—
Racks—
Pallets—
Pallet Dunkers—
Lintel Machines—

HANDLE IT *PROFITABLY*

with the **KENT** LINTELATOR

The Only Lintelator Machine Available

The **KENT MACHINE CO.** Cuyahoga Falls, Ohio

Manufacturers of CONCRETE PRODUCTS MACHINERY *Since 1925*

Quality **CINDERS**

(ANTHRACITE)

CARLOAD SHIPMENTS

CLEANED, SCREENED, CRUSHED

SIZING: HALF INCH DOWN TO POWDER — READY MIXED FOR YOUR MIXER — LOW IN COMBUSTIBLE CONTENTS — FREE OF STAINING CAUSES.

STEADY DEPENDABLE SUPPLY SHIPPED ON SCHEDULE

WRITE US NOW — MENTION RAILROAD DELIVERY

H. HESSEY MILLER, CHESTER, PA.

Why not *FACE* your cement blocks?

Don't make just plain *CEMENT* building units

Preface your *BLOCKS* with brilliance

Beauty *WITH* durability

Use *SPARKLE-CRETE* today!

Write for Sparkle-Crete plan to create a sparkling, permanently colored facing for cement building units.

SPARKLE-CRETE COMPANY

30 N. La Salle St. Chicago 2, Ill.

The large precast Septic Tank Manufacturers prefer

CARPENTER SEPTIC TANK FORMS

Because they are

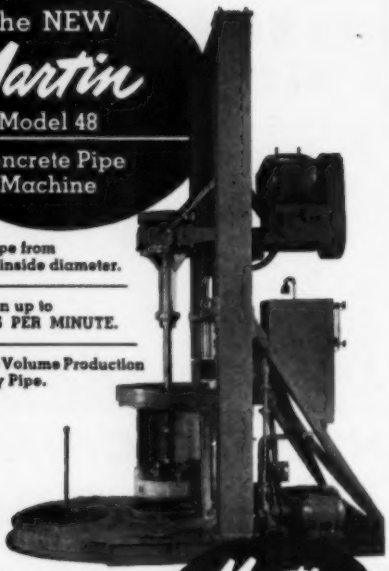
QUICKLY POURED STRIPPED HANDLED RESET FOR POURING AGAIN

Loaded, transported and set in the hole by ONE MAN with the Carpenter Powered Delivery Rig.

CARPENTER MANUFACTURING COMPANY

Phone 22018 — R.F.D. No. 1, Box 470, Richmond, Virginia

The NEW
Martin
Model 48
Concrete Pipe Machine



Makes pipe from 4" to 24" inside diameter.

Production up to 2 JOINTS PER MINUTE.

For Large Volume Production of Quality Pipe.

Backed by more than 40 years experience in the manufacture of concrete pipe equipment and irrigation gates and valves.

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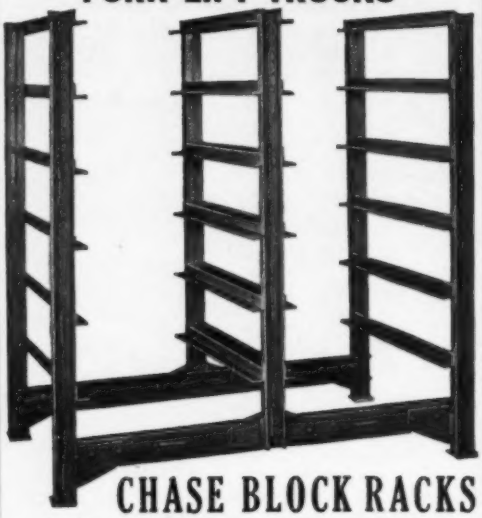
IRON WORKS
Box 2857, Terminal Annex
Los Angeles 54, California

FOR PLATFORM OR FORK LIFT TRUCKS



CHASE BLOCK RACKS

Write for Literature on Complete Line

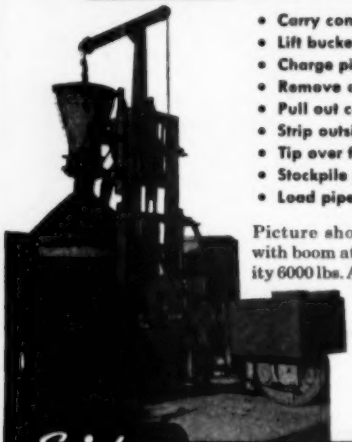
Built to your measurements! Chase sturdy, all-steel racks, backed by 50 years of engineering experience, keep cost down and upkeep low.

- Lift Truck Racks
- Turntables
- Concrete Block Cars
- Transfer Cars
- Dump Cars
- Dryer Cars
- Decks
- Clay Cars

THE CHASE FOUNDRY AND MANUFACTURING COMPANY
COLUMBUS 7, OHIO

Handle ANY JOB in a concrete Pipe Plant

with an *Erickson* POWER LIFT TRUCK



- **Carry concrete bucket**
- **Lift bucket over form**
- **Charge pipe form**
- **Remove cone from form**
- **Pull out core**
- **Strip outside form**
- **Tip over finished pipe**
- **Stockpile pipe**
- **Load pipe on trailer**

Picture shows Model F-6B with boom attachment, capacity 6000 lbs. Also F-10, capacity 10,000 lbs., and F-16, capacity 16,000 lbs.

Write for Literature

Erickson **POWER LIFT TRUCKS, Inc.**
1403 Marshall Street N. E. • Minneapolis 13, Minnesota

WRITE OR PHONE
for full information on
GOCORP BLOCK MACHINES

Gocorp Clipper • Batch Mixer Gocorp-Yoder Continuous Mixer and Block Tester • Gocorp Tile Machine • Skip Loader • Hoist Joltcrete Automatic Pallet Feeder • Gocorp Attachments and Parts for Stearns Equipment.

Cement **Concrete**

COLORS

Red
Yellow **Blue**
Green **Brown**
Black

REICHARD-COULSTON, INC.
15 East 26th St.
New York 10, N. Y.

QUALITY CONCRETE MASONRY CONSTRUCTION

QUALITY WALLS REQUIRE QUALITY WORKMANSHIP

STRONG, durable and weathertight walls are the product of six important essentials —proper planning and design, adequate footings, quality block laid with good mortar, the use of concrete sills and lintels and *quality workmanship.*

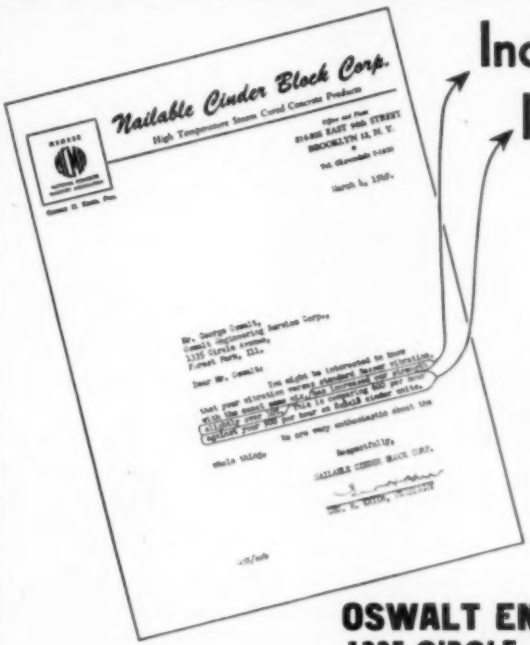
Quality workmanship means laying each unit plumb and true, using full face shell bedding and compacting the mortar when it has partially hardened.

Such craftsmanship is the builder's best assurance for a prosperous future. It builds a quality reputation through satisfied customers, and that, in turn, stimulates more construction and more jobs. Write for free, illustrated literature, distributed only in the U. S. and Canada.

QUALITY WORKMANSHIP— THE SIXTH OF 6 IMPORTANT STEPS IN QUALITY CONCRETE MASONRY CONSTRUCTION

PORTLAND CEMENT ASSOCIATION Dept. A7-58, 33 W. Grand Ave., Chicago 10, Ill.

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work


Nailable Cinder Block Corp.
High Temperature Steam Cured Concrete Products

Increased Quality
Increased Production
Results in
Increased Profit

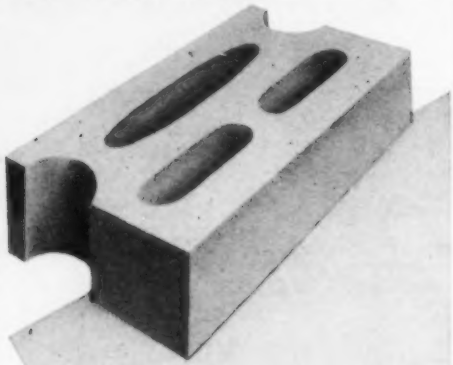
This could be a letter from you and you could also be in this advantageous position.

PROOF OF RESULTS — that *Oswalt Dual Vibration* added to your Besser Vibrapac will increase your output without sacrificing quality with your present equipment.

Write for information

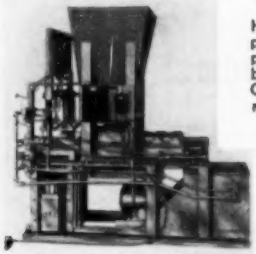
OSWALT ENGINEERING SERVICE CORP.
1335 CIRCLE AVE. FOREST PARK, ILL.
Phones: COlumbus 1-7073 — Forest 3898

A MACHINE THAT MAKES *Redi-Furred* AND CONVENTIONAL BLOCKS



FIVE POINTS BUILDERS SEE AND DEMAND...

Eliminates the need for furring and lathing.
Insulates against heat and cold—15.7% less heat loss.
Staggered air spaces prevent condensation.
Lays faster and with a better bond.
Simplifies electrical and plumbing installations by permitting wide interior channels.



Hydraulic Press-Pac action packs aggregate with 2,400 pounds of force while mold box and cores are vibrating. Complete explanation upon request.

Write, wire, or call for descriptive literature and prices.

PREVENTS CONDENSATION

Red arrows indicate where moisture and frost seek to penetrate GEORGE REDI-FURRED BLOCK and are thwarted by air spaces.

F. C. GEORGE MACHINE *Company*
100 S. WESTMORELAND DR., ORLANDO, FLA.

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*See also Detailed Information in 1948 Pit and Quarry HANDBOOK and Concrete Industries Yearbook

For Efficient, Economical Operation

INVESTIGATE

MULTI-MIXER CORE SAND MIXERS
Completely Automatic

MULTICO BLOCK MAKING MACHINES
Completely Automatic

MULTIPLEX MACHINERY CORP.
ELMORE, OHIO

READ

what America is saying about ayr-trap!

COLONIAL SAND & STONE CO.
INCORPORATED

30 ROCKEFELLER PLAZA
NEW YORK 20, N.Y.

TELEPHONE CIRCLE 5-9400

A. C. Horn Company, Inc.
Long Island City, N. Y.

Gentlemen:

We have been using Ayr Trap on many thousand yards of concrete for approximately one year.

Our experience with Ayr Trap has been entirely satisfactory.

We have found:

1. Concrete with this mix does not suffer any reduction in strength in the richer mixes and in the leaner mixes show an increase in strength.

2. Same is not sensitive to variations in the type and amount of sand incorporated in the mixes, therefore, we are not called upon to change the amount we add everytime a new sand or a different mix is used.

3. No elaborate equipment is necessary for dispensing same. Ordinary pint measure is used. Variations on the recommended quantities does not seriously affect the results.

4. Adding this material to the mixes simplifies our plant operations in that we do not have to tie up any storage bunkers as would be required with the interground cement. Errors that would result with the variations of cement as required are reduced.

Very truly yours,

COLONIAL SAND & STONE CO., INC.

Frank L. Kelly
Vice President

ayr-trap

THE AIR-ENTRAINING AGENT

FOR CONCRETE AND FOR CEMENT MORTARS

A.C. HORN COMPANY, INC.

SUBSIDIARY OF SUN CHEMICAL CORPORATION

Write today for important data on Ayr-Trap as used by these big firms to save money

Manufacturers of Materials for Building Maintenance and Construction
10th Street & 44th Avenue, Long Island City 1, N.Y. • HOUSTON • CHICAGO • SAN FRANCISCO • TORONTO

STEARNS CONCRETE BLOCK MANUFACTURING EQUIPMENT

PLANNING AND SERVICING BY EXPERT STEARNS CONSULTANTS

can mean

Super-Production for You!

When you buy Stearns Concrete Block Manufacturing Equipment and parts *from the Stearns Company*, you can be sure you are purchasing *GENUINE* articles, tested and proved long ago. And now Stearns offers you free of charge the services of its large staff of Consulting Engineers, so that you may achieve super-production even sooner! Planning new or modernizing old plant layouts . . . selecting, installing and servicing Stearns equipment . . . increasing operating efficiency—all by experts in their line, who know your problems and have already worked out *with you and for you* such modern advances as the new Stearns Mold Boxes and Pallets for Modular Sized Units and Replaceable Liners for All Joltcrete Machines. Yes, there is a great difference between knowing and guessing!

MODERNIZE WITH A STEARNS!
BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW

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MANUFACTURING COMPANY • INC
ADRIAN • MICHIGAN

STEARNS 15

JOLTCRETES

CLIPPER STRIPPERS

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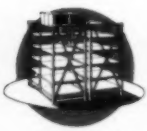

TURNTABLES

SINTERLITE

45,000 pounds of "SOLID MUSCLE" in this BAY CITY ¾ yard shovel

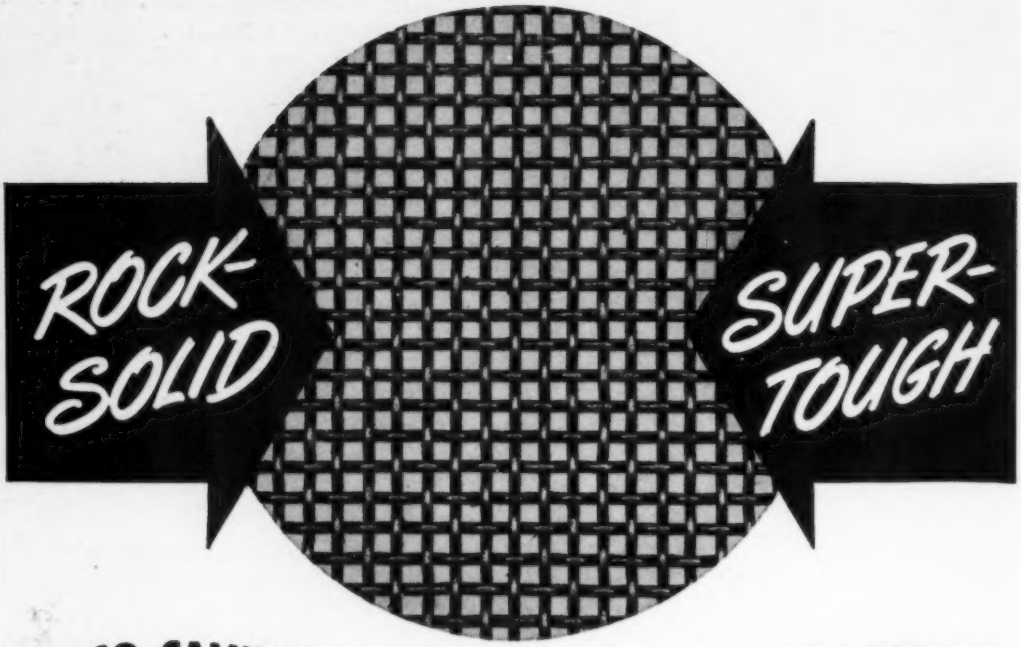
This BAY CITY model 45, with a ¾ yard bucket, is a total of 45,000 pounds of "solid muscle" on the job for the Caton Corp., of Halethorp, Md. Easily handling their hardest digging, the BAY CITY "45" is built to withstand heavy duty service.

Here are but a few of the many features that make a BAY CITY your BEST BUY: helical power gears, for quiet smooth operation; swing lock that positively holds any desired position; booster clutches permitting real fingertip control; unit-cast manganese base built like a battleship turret! Get the facts—all the facts—before you buy. Write us, today, for information.

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN See your nearest Bay City dealer for excavating and material handling equipment in sizes from ⅜ to 1¼ yard with crane rating up to 20 tons. Both crawler and pneumatic tire mountings.



WISSCO-CALWICO SUPER-TEMPERED PRECISION SCREENS

There are two factors that make **Super-Tempered** Precision Screens absolutely tight and accurate. They are made of super-tempered steel . . . and no other steel so combines resistance to abrasion and fatigue. Then they are woven on specially designed hydraulic looms . . . looms so powerful they can weave ¾" steel rod as if it were #10 wire.

The result of this combination is a screen that can't be beat for tightness, toughness and dependable long life accuracy.

You can get **Super-Tempered** Precision Screens in any length required for vibrating screen or trommel. They can be furnished with welded, hooked or reinforced edge to fit any type of vibrator. Write our nearest office for full details.

WISSCO *Wire Cloth* **CALWICO**

East of the Rockies it's **WISSCO**
WICKWIRE SPENCER STEEL
STERLING ST., CLINTON, MASS.

CF&I

CALWICO *On the Pacific Coast*
THE CALIFORNIA WIRE CLOTH CORP.
1080—19TH AVE., OAKLAND, CAL.

THIS MODERN CONVEYOR SYSTEM IS—

A WILLING SLAVE—To A Rock Pile

In this modern California rock plant, Stephens-Adamson conveying equipment, controlled from one central station, is a "Willing Slave" . . . moving 300 to 400 tons of rock per hour.

Long experience with rock handling problems enables Stephens-Adamson conveying engineers to recommend and furnish the right equipment and best arrangement for low-cost handling under any given set of conditions.

In your initial planning for a new unit or a completely new bulk materials handling system—first get the recommendations from this experienced staff of S-A engineers. Write today.

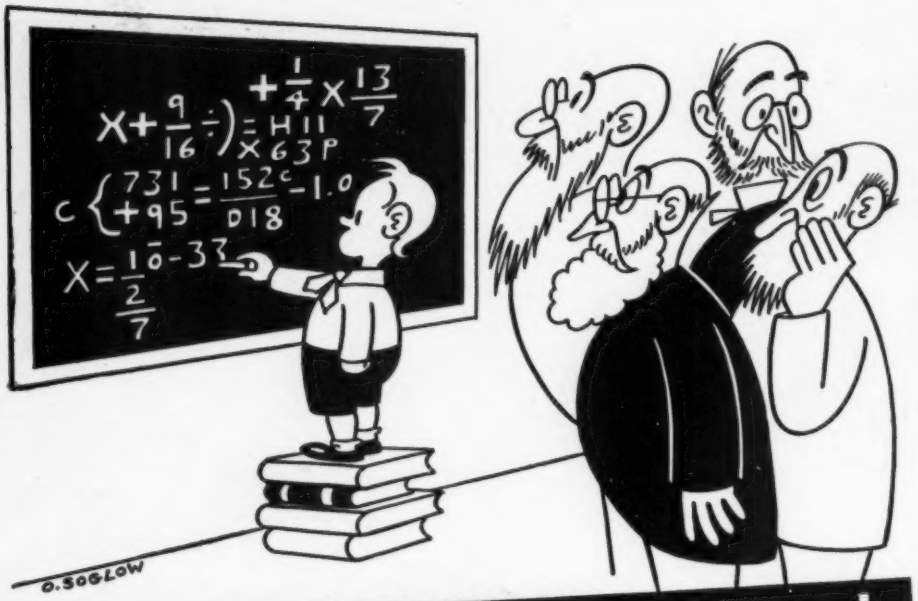
KERN ROCK COMPANY
BAKERSFIELD, CALIF.

Centralized control of all conveying equipment by one man, at ground level, is an outstanding feature of this modern rock handling installation, designed and built by S-A engineers. Several grades of crushed rock, gravel and sand are handled from receiving hopper through crushing and screening to storage bins. Belt conveyors, screens and pan feeders comprise the major conveying equipment furnished here by S-A.

STEPHEN S-A ADAMSON MFG. CO.

20 Ridgeway Avenue, Aurora, Illinois · Los Angeles, Calif. · Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT



You'll be surprised at these figures!

- 80 million Americans own $48 billion of U. S. Savings Bonds.
- 20,000 of the nation's 38,000 firms employing 100 or more persons are operating Payroll Savings Plans.
- 7,500,000 workers are buying an individual average of $20 of Bonds per month.
- For the year 1948, sales of Series E Bonds *exceeded redemptions* by $495,148,000. The net figure for all Series after redemptions and maturities was $2,151,140,000.

What does all this mean to you? Well, it means first of all that your Treasury Department is successful in its program of increasing the nation's economic security by spreading the national debt. Secondly it means that most of the nation's business leaders recognize the value of the Payroll Savings Plan sufficiently to promote it within their companies.

For example...

To give you some idea of the Plan's growing popularity: 86,384 employees of a prominent electrical manufacturing company were investing in Bonds at the rate of $30,005,270 as of the end of 1948. This is a gain of nearly 100% over 1947, when 45,000 employees participated in that company. The treasurer of a well-known shoe company reported that, of his concern's 19,060 employees, 9,240 were in the Plan and had invested $146,807.32 in Bonds via deductions during the preceding month.

Why promote it?

We all know how buying Bonds builds an individual's future security. But there are *company* benefits too! Nation-wide experience shows that Payroll Savings increases each participating employee's peace of mind—makes him a more contented, more productive worker. It reduces absenteeism, lowers accident rates, increases output, and improves employee-employer relations.

It's easy to boost participation

1. See that a top management man sponsors the Plan.

2. Secure the help of the employee organizations in promoting it.

3. Adequately use posters and leaflets and run stories and editorials in company publications to inform employees of the Plan's benefits to them.

4. Make a person-to-person canvass, once a year, to sign up participants.

These first four steps should win you 40-60% participation. Normal employee turnover necessitates one more step:

5. Urge each new employee, at the time he is hired, to sign up.

Nation-wide experience indicates that 50% of your employees can be persuaded to join—without high-pressure selling. All the help you need is available from your State Director, U. S. Treasury Department, Savings Bond Division.

The Treasury Department acknowledges with appreciation the publication of this message by

PIT AND QUARRY

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.

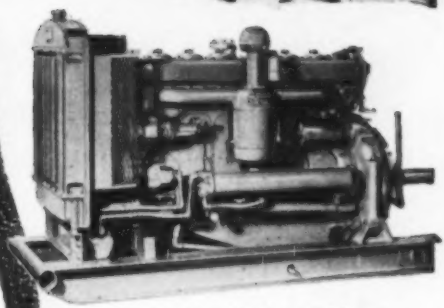
Profit by Lafayette County's experience!

2000 Tons of Crushed Rock Per Day on 66 Gallons of Fuel . . .

Lafayette County, Wisconsin, is proving daily that the best equipment pays for itself in reduced operating costs. The crushing plant illustrated above, for example, with a 90 H.P. (Cont.) Murphy Diesel on the primary and a 135 H.P. (Cont.) Murphy Diesel on the secondary, produces 900 cu. yds. of 1" material and 725 cu. yds. of ¾" material—a total of over 2000 tons—per nine hour day on only 66 gals. of economical diesel fuel!

Mr. Geo. E. Alderson, Commissioner of Lafayette County, says of the set-up, *"We are sure glad we have the two Murphys on our crushing plant and I can say you make no mistake when you use Murphy Diesels . . . I am sold on the set-up all the way through."*

MURPHY DIESEL COMPANY
5307 W. Burnham St., Milwaukee 14, Wisconsin



Murphy Diesel Engines and Power Units are available in sizes from 90 to 190 H.P.; Generating Sets from 60 to 116 K.W. All models are "True" Diesel Engines featuring the famous Murphy Unit Injector. Ask your Murphy Diesel Dealer for full details or write direct.

MURPHY DIESEL

Big News
FOR HEAVY HAULERS

New "H" model heavy duty GMCs are the biggest truck news of the year . . . and for many years!

They comprise the most complete line of all-new, all-improved heavy duty trucks, gasoline and Diesel, ever introduced at one time . . . 61 basic models with weight ratings from 19,000 to more than 90,000 pounds.

They provide more important new features and advancements than any trucks in GMC history . . . exclusive GMC "Bumper-Built" front end . . . the industry's most powerful engines size for size . . . stronger, safer, roomier cabs . . . improved frames, springs, brakes, clutches, and axles.

They benefit by all the advantages of the truck industry's finest engineering skills and manufacturing facilities.

And they are priced to give substantial savings on the original investment . . . by including needed items of equipment which, in general practice, are added to the base price.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

Packed with *POWER*

Five power-packed gasoline engines, including a big new "707" of 225 horsepower. Two famous GM 2-cycle Diesel engines of 133 and 200 horsepower.

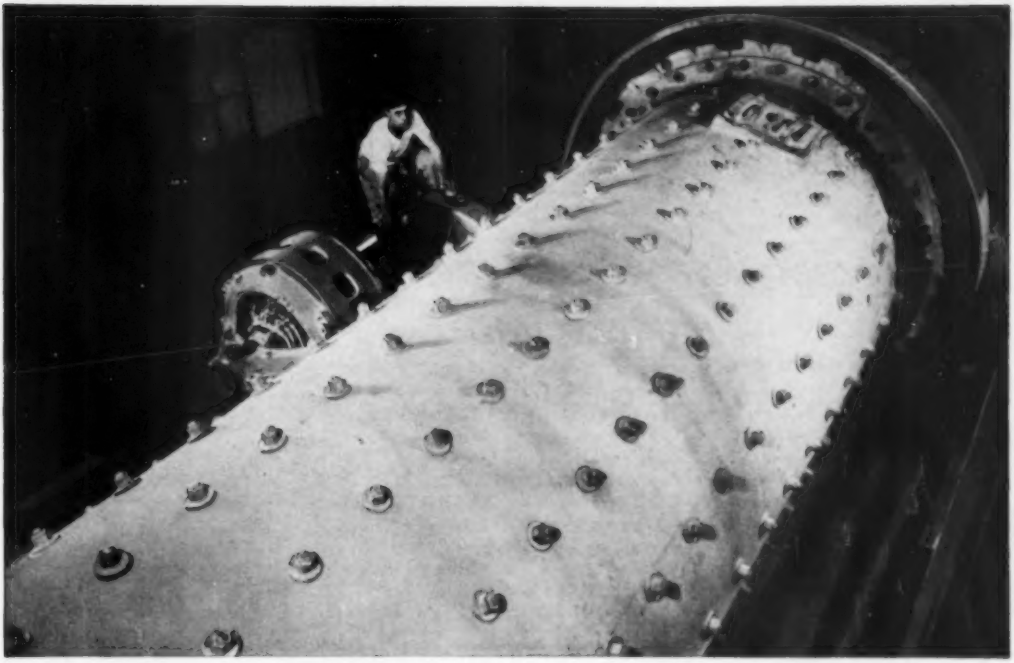
Built to *"TAKE IT"*

Deeper, stiffer frames . . . heavier, wide-track front axles . . . longer front springs with shock-absorbers standard . . . big, fast-acting brakes.

Cabs Up to *1½ FT. WIDER*

More leg room and head room . . . wider doors and windows . . . bigger windshields . . . built-in ventilation . . . snubbed seat action . . . complete insulation.

GMC
GASOLINE • DIESEL
TRUCKS



11 Years Trouble-free Washing With Allis-Chalmers Blade Mill

NEITHER LINERS nor blades have had to be replaced on this 7 by 18 ft A-C blade mill in the washing plant of Blair Limestone Co., Martinsburg, W. Va. No shut-downs since mill was put in production in 1938!

Limestone flux for blast furnace feed is produced here. Specifications are exacting; product must be free of contaminants. This blade mill has 112 internal cast steel blades which wash stone and chips thoroughly clean by *combined cutting and washing action.*

CHECK IMPORTANT FEATURES

Because Allis-Chalmers blade mills are supported on trunnion bearings instead of rollers, faster speeds and more intensive washing are possible. This mill, for example, revolves more than *twice as fast* as the average roller mounted scrubber. A permanently fixed relationship between gearing and drum is assured.

Shells are heavy, all-welded steel plate. A special seal on feed end bearing prevents backwash of abrasive pulp. Liners and blades are renewable and are available in abrasion-resistant alloy steels.

Allis-Chalmers blade mills handle ores and aggregates up to 10 inches in size. Mill diameters are 6, 7, 8 and 9 ft; lengths 10 to 22 ft. Variable speed, pulp level and blade adjustment make possible a wide range of applications in mining and processing.

A trained A-C processing engineer in your area will gladly look over your production set-up and help you select an economical blade mill or other washing equipment. A-C offices or distributors are in principal cities in the U. S. and throughout the world.

Kilns, Coolers, Dryers

Jaw Crushers

Hoists

Mills

Gyratory Crushers

Vibrating Screens

AND OTHER EQUIPMENT FOR THE CRUSHING, CEMENT AND MINING INDUSTRIES

ALLIS-CHALMERS, 974A SO. 70 ST.
MILWAUKEE, WIS.

A 2655

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

THE 1/2 YARD SCHIELD BANTAM

TRUCK MOUNTED POWER SHOVEL ● TRENCH HOE
DRAGLINE ● CLAM ● PILE DRIVER ● CRANE

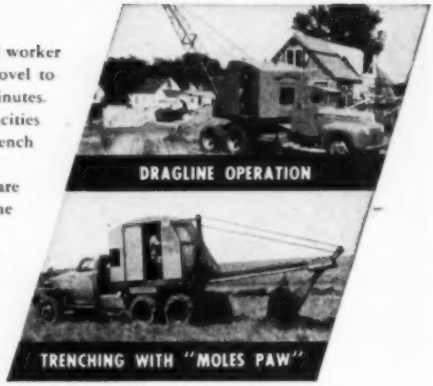
drive up and dig in...

The BANTAM mounts on any 1½ ton truck. It's a fast hard worker on the job and saves time between jobs. Changing from shovel to trench hoe, dragline, clam, piledriver or crane is a matter of minutes.

Its full circle design and fast cycle operation results in capacities of 60 yards per hour as shovel or dragline. When used as a trench hoe it digs 100 feet of five foot ditch per hour.

All major assemblies roll on ball bearings, mechanical clutches are external expanding type, split type laggings provide proper line speeds. Hook roller design eliminates strain on center pin.

For mobility, versatility, easy operation, and capacity for getting jobs done profitably GET A BANTAM. Write for details.

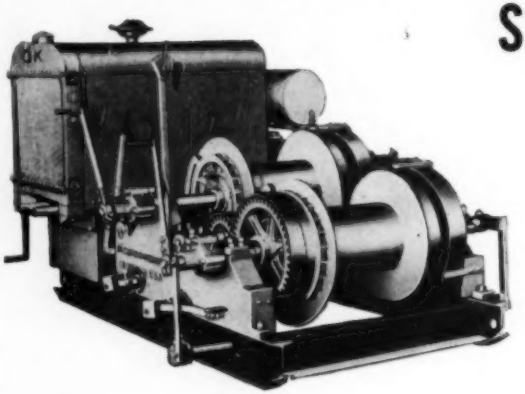


DRAGLINE OPERATION

TRENCHING WITH "MOLES PAW"

SCHIELD BANTAM CO. INC.
220 Park Street **Waverly, Iowa**

O.K. HOISTS MEET *Your* SPECIFICATIONS



DRUM: Single, Double, Three or 2 Drum Slack

POWER: Gasoline, Electric or Diesel

SPEEDS—Ft. Per Min.—24, 150, 200, 240, 280, 500

CAPACITY — Lbs. — 1300, 2000, 3200, 5000, 7000, 9000, 12500, 15500, 19000

HORSE POWER: 8, 18, 28, 50, 65, 80, 105, 125, 150, 175, 185, 200

For light work or heavy work in all fields—giving satisfaction since 1903—and sold with a written guarantee.

Write for FREE bulletin or name of your nearest dealer.

O.K. CLUTCH & MACHINERY CO.

1953 FLORENCE STREET **COLUMBIA, PENNA.**

it DIGS...it LOADS at tremendous savings

Whether you need it for excavation work or loading from stockpiles or both, you need the new low production cost of the Dempster-Diggster. Here is the only small shovel that works on a hydraulic, simultaneous or independent crowd and hoist action and completely eliminates tractive effort in loading with wheels. Its variable crowd action at any dipper position means the Dempster-Diggster can dig lower . . . 15 inches below grade. Exclusive hoisting action means it can dig higher . . . digs out a 15 ft. bank. It's the only small shovel featuring such speed and mobility . . . travels at truck speeds on the road . . . gets in tight places on big jobs, freeing large shovels for heavier work. Ideal for the small and medium size excavation jobs yet powerful and fast enough for big jobs.

Stockpiling or loading work is easy for the DEMPSTER-DIGGSTER. Its speed . . . its 15 ft. turning radius . . . its extraordinary dumping reach help the Dempster-Diggster complete the average loading job in an amazingly short time. Dempster-Diggster buckets are easily interchangeable and are availab'e in three sizes. 1 cu. yd. (heaped) with hardened steel teeth for digging . . . 1½ and 2 cu. yd. for loading and stockpiling work. Power is supplied by a heavy duty gasoline or diesel engine. Hoisting, crowding, steering and braking are all 100% hydraulic. For complete information, write today for Folder Number 8154.

Large photo above shows Dempster-Diggster loading crushed stone. Note how independent crowd and hoist action permits bucket to follow the slope of the material. At right, top: Digging out high bank. Right, center: Closeup of 1 cu. yd. (heaped) digging bucket. Right, bottom: Dumping crushed stone into truck.

DEMPSTER BROTHERS INC.

279 N. KNOX **KNOXVILLE 17, TENNESSEE**

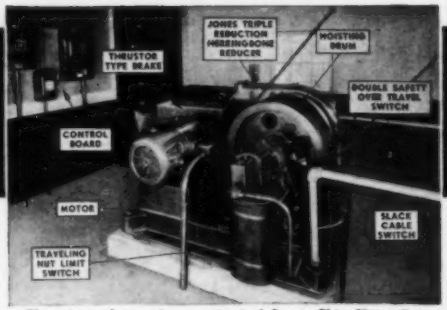
For Economical Material Handling

JONES SKIP HOIST DRIVES

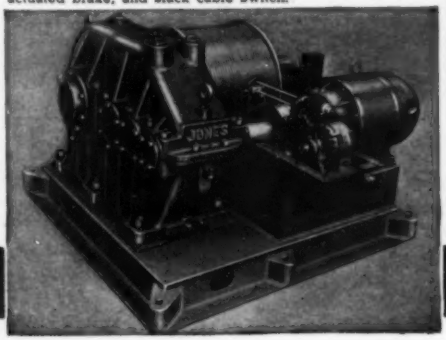
FOR speedy operation, reliable service and over-all economy the Jones Skip Hoist Drive has made a name for itself in a wide variety of material handling service. These skip hoist drives are built as complete units by the Jones organization in several types with base to take any motor specified by the purchaser. They are equipped for all the modern protective devices such as cam or nut type limit switches, solenoid or disc type brakes and slack cable switches. The drives are single, double, or triple reduction Jones Herringbone Speed Reducers, built to stand up under the many years of pounding that a skip hoist drive has to take. The shafts are supported in roller bearings, with rolling action, rack generated gear and pinion teeth to insure easiest possible starting with low starting-peak loads. All reducer bearings and gears are automatic oil-bath lubricated.

The Jones organization has an extensive file of information on skip hoist drive problems and will be pleased to work with you on any problems involving such applications.

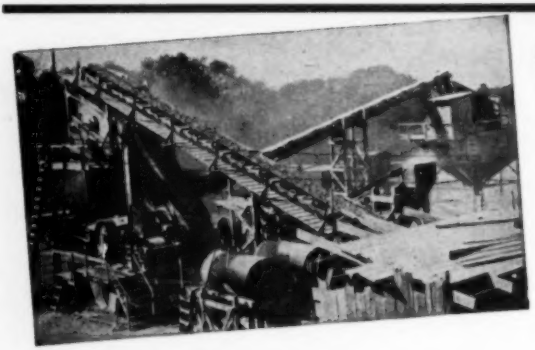
W. A. JONES FOUNDRY & MACHINE CO.
4441 Roosevelt Road, Chicago, Illinois



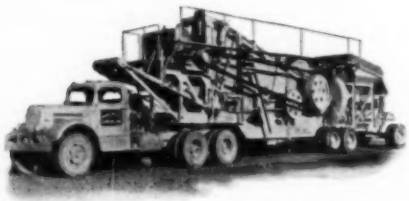
• The view above shows a typical Jones Skip Hoist Drive installation while the view below shows one of the Jones units equipped with traveling nut type limit switch, motor actuated brake, and slack cable switch.



Jones HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS • CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES • ANTI-FRICTION PILLOW BLOCKS • PULLEYS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES



Meet the profit test...
WITH THE HIGHER PRODUCTION
OF A DIAMOND ROTOR-LIFT PLANT



Produce more aggregate per hour...

This year . . . watch the profits grow as more aggregate is produced. A Diamond Rotor-Lift Plant is designed for higher production with a powerful jaw crusher, rugged roll crusher, efficient screens, and conveyors, turning out uniform material fast! The straight through run eliminates costly feed backs and assures more material in less time.

Meet your profit test with the higher production of a Diamond Rotor-Lift Plant. Investigate today.

See your local Diamond dealer or write for complete information.

DIAMOND
DIAMOND IRON WORKS, INC.
AND THE MAHR MANUFACTURING COMPANY DIVISION
MINNEAPOLIS 11, MINNESOTA

For EFFICIENT and ECONOMICAL SCREENING

For use with Vibrating and Shaking Screens, the uniformity of mesh throughout long service life is one of the outstanding advantages of Hendrick Perforated Metal Plate.

Hendrick Perforated Plate is available in any shape of opening — round, square, "squaround," hexagonal, diamond, oval, slotted, tapered — and can be supplied in any required gauge in tank, high carbon, high tensile, and abrasive-resisting steels, and in other commercially rolled metals. It is furnished either flat or corrugated. Write for full information.

SEE OUR CATALOG IN SWEET'S

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Manufacturing Company

Perforated Metals
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Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

39 DUNDAFF STREET, CARBONDALE, PENNA.

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LIGHTER

STRONGER

WELLMAN

Williams Type BUCKETS

Stronger because they're constructed of **welded rolled steel**... *lighter* because non-essential weight has been eliminated. Wellman buckets meet every requirement of heavy service with longer life and lower cost! A type for every service: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service. ⅜ to 16½ yd. capacity.

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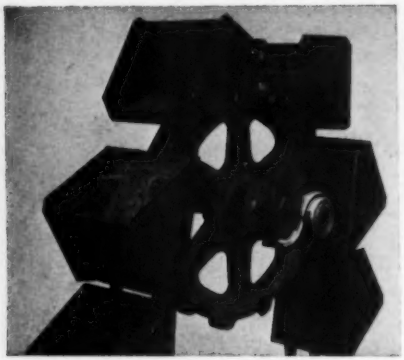
THE WELLMAN ENGINEERING COMPANY
7014 CENTRAL AVENUE CLEVELAND 4, OHIO



ELEVATOR BUCKETS
ELEVATOR CHAIN

Our stock is large—can ship most sizes and types from stock

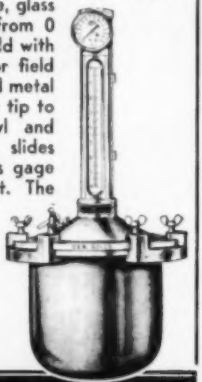
ALL TYPES OF ELEVATORS

•

TRIANGLE ENGINEERING COMPANY
2950 West 26th Street, Chicago 23, Illinois

The Cenco Entrained Air Indicator

No. 25535 Cenco Entrained Air Indicator measures the percentage of air entrained in fresh concrete mixtures by the pressure method. The capacity is 0.22 cu. ft. Notice these exceptional features: The unique clamping arrangement consists of 2 parts, each with three wing screws for rapid, convenient and secure clamping of the cover. The bowl is made of drawn steel to resist abrasion, denting or damage resulting from handling and shipping. It is copper and nickel-plated. Precision bore, glass measuring tube is graduated from 0 to 8% air in 0.1% divisions. Sold with all accessories for laboratory or field use, including rawhide mallet and metal rodding tool with a hard rubber tip to prevent damage to the bowl and wooden case. A metal sleeve slides around the "Pyrex" brand glass gage to protect it during shipment. The round bottom of the bowl allows for easy rotation and inclination of the vertical column to remove entrapped air bubbles.



Write for descriptive Circular No. 1186

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CENTRAL SCIENTIFIC COMPANY
Scientific Apparatus · Instruments · Chemicals
1700 IRVING PARK ROAD, CHICAGO 13
NEW YORK BOSTON SAN FRANCISCO NEWARK LOS ANGELES TORONTO MONTREAL

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We invite your inquiries

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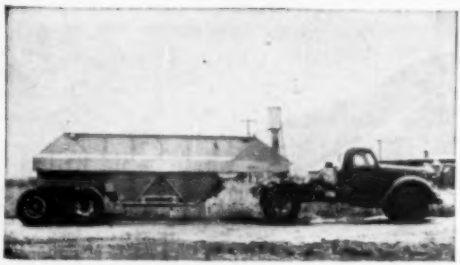
A. LESCHEN & SONS ROPE CO.
ESTABLISHED 1857
5909 Kennerly Avenue St. Louis 12, Mo.
NEW YORK · CHICAGO · DENVER · SAN FRANCISCO · PORTLAND · SEATTLE



Landis 18 yard, off the road trailer. Overall length 23'9". Width 8', height 8'. 2-door openings 1'8½"x11'9". Hopper of 3/16 high tensile steel. Tandem axle good for soft ground. Door opening by gravity, air closing from truck cab.

Aggregates Hauled Faster, Cheaper
in
LANDIS AIR DOOR TRAILERS

10 to 32 Cubic Yard Loads

Fast air doors mean more trips per day

LANDIS STEEL COMPANY
Picher, Oklahoma

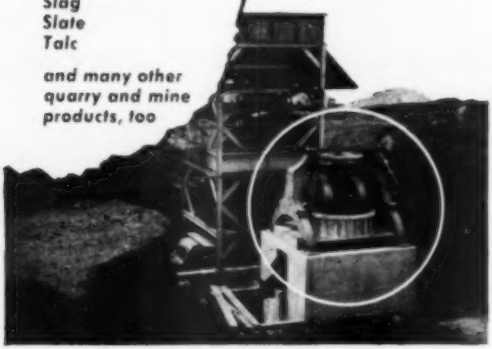
NAME IT...

Bauxite
Cinders
Dolomite
Feldspar
Fullers' Earth
Industrial Clays
Kaolin
Lightweight Aggregates
Lime Putty
Magnesite
Mica
Phosphate
Portland Cement Shale
Pumice
Refractories
Sand-Lime Brick Shale
Silica Rock
Slag
Slate
Talc

and many other quarry and mine products, too

. . . and you can have it

***American* GROUND**



"American" No. 9 Heavy Duty Grinder

What material do you grind? Chances are that one of the 8 sizes of "American" Grinders can deliver the VOLUME you need . . . in the SIZE you require . . . at a LOWER COST that will impress you.

If your product is of the type suggested by the list above . . . let an "American" grinding specialist help you lick your problems once and for all. Write, wire, phone.

To suggest rate of output . . . "American" Grinders produce minus 3/8" aggregate ground CINDER and clinker volume at these rates:

Grinder No.	5	6	7	8	9	482	418	384
Yds. per Hour	4	6	12	20	30	35	50	75

***American* by**
THE W. A. RIDDELL CORP.
BUCYRUS, OHIO

MADESCO BLOCKS
stand the gaff

Protect your wire rope investment!

wire rope blocks

USE GOOD TACKLE BLOCKS—check the age of the blocks you are now using.

Tackle blocks stay around a long time — that's the way we make them. However, sheaves, pins and bushings eventually show signs of wear. All these can affect the life of your wire rope.

MADESCO blocks will extend the life of your wire rope, due to Timken roller bearings, bronze bushings or automatically lubricated sheaves.

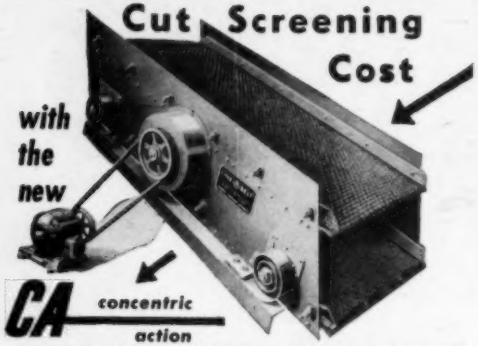
MADESCO blocks are made in a complete line to meet every requirement.

Send for complete catalog . . .

MADESCO
TACKLE BLOCK COMPANY
A subsidiary of Nazareth Cement Company

A quarter century of service

EASTON, PENNSYLVANIA



LINK-BELT VIBRATING SCREEN

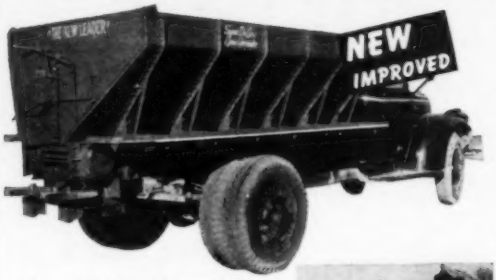
There's nothing like it the way the new Link-Belt Concentric Action screen cuts cost and hikes capacity. It has extreme smoothness in starting and stopping; superior efficiency on overloads; increased amplitude at high speeds; unobstructed screening surface. Easily inspected, serviced and adjusted. Can be used for both medium and heavy duty sizing of a large variety of materials as well as for scalping, dewatering or rinsing operations.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Houston 3, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities. 11.15

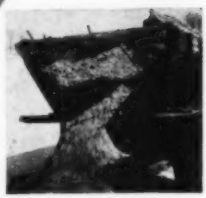
Ask for Book 2154

NEW LEADER *Super Deluxe* LIME AND ROCK SPREADER



The most advanced spreader on the market. Spreads lime, sand, chips, gravel . . . hauls and self-unloads all types of construction materials including crushed rock. Reinforced welded steel frame, wooden hopper, new simplified worm gear drive, direct from truck power take-off. Mounts on any standard truck chassis.

Write for illustrated literature.



New swinging endgate. Distributor discs easily and quickly removed.

HIGHWAY EQUIPMENT COMPANY, INC.

603 D AVENUE N. W., CEDAR RAPIDS, IOWA

Manufacturers of the World's Most Complete Line of Spreaders

HOW TO SELECT A CLAMSHELL BUCKET

For best performance be sure to check

- Crane Capacity
- Work To Be Done
- Clearances
- Bucket Type and Size

Determine *closing line pull*; also *size* of closing and holding cables • *Allowable gross load* is the closing line pull or safe working gross load, whichever is less • Consider *headroom clearance* and any other *space limitations* • Determine *character of material* to be handled • Then select the *type, size* and *weight* of bucket and the proper *accessories* to make the bucket adaptable to your operations. For complete details, send for Bulletin 2076.

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THE MOST COMPLETE RANGE OF SIZES AND TYPES

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THE KING POWDER COMPANY, INC.
CINCINNATI 1, OHIO
Incorporated 1870

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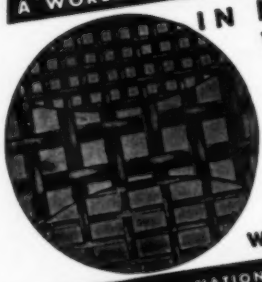
Industry has
A WORLD OF CONFIDENCE
IN NAT-ALOY WIRE CLOTH



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. . . for a dependable, long-wearing, non-crystallizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

Write for Catalog No. 55

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St. Paul, Minn.

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PLATES—Sizes from 4" to 48" Single or triple gap

PULLEYS—Sizes from 12" to 30" dia. Belt widths 4" to 60"

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PNEUMATIC HUMPS—To fit pipe diameters 3" to 20"

UNITS (Portable)—Sizes from 12" to 30" dia. Belt widths 4" to 60". Lengths to specification

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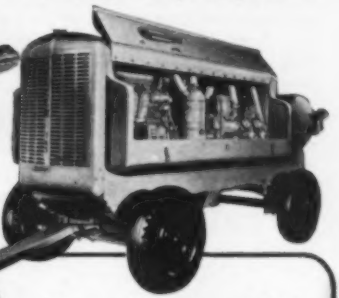
4 DAYS' FOOTAGE DRILLED IN 3

with JAEGER "air-plus" pressure



75 cfm

125 cfm

185 cfm

250 cfm

365 cfm

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Old compressor ratings, set in 1932, underpower today's tools. Jaeger gives you the air you need to maintain steady 90 lbs. pressure in a full set of tools, make tools hit harder and faster, do 30% to 40% more work in the same number of hours. Ask your Jaeger distributor.

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DEPENDABLE FOR 50 YEARS

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TWIN CITY IRON & WIRE CO.

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Dry core sand is supplied the year around by the Standard Sand Co. with a McDermott 5'x30' Rotary Dryer (like the one pictured above).

The sand, perfect for foundry casting, goes through the dryer at the rate of 60 tons per hour.

McDermott Rotary Dryers are used wherever sand, stone, slag or other similar products of reduced moisture content are required.

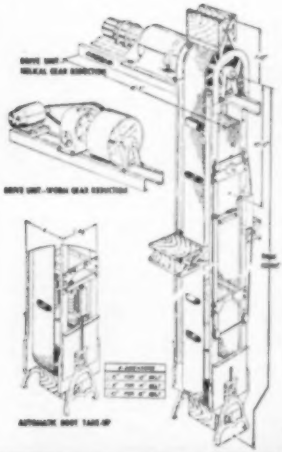
McDERMOTT BROS. COMPANY Allentown, Pa.

Manufacturers of Rotary Dryers, Kilns, Batchers, Stacks

Midwestern Representative

Asphalt Equipment Sales Co., 430 E. Maple Rd. Blvd., Indianapolis 5, Ind.

EHRSAM EMPLOYEES ELEVATOR makes you MONEY



Steps saved . . . money saved. And when you count the steps saved, through use of an Ehrsam elevator, it means a neat profit for you.

Ehrsam Employees Service Elevator is made for 3 widths of belt, 12", 14" and 16" with three types of drive units of either 3, 5 or 7½ horsepower. Special applications for bags and boxes. Installation costs are reasonable. Write today for complete information.

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ENTERPRISE, KANSAS

New Records in Gravel Reduction...RELIANCE Jaw Crusher

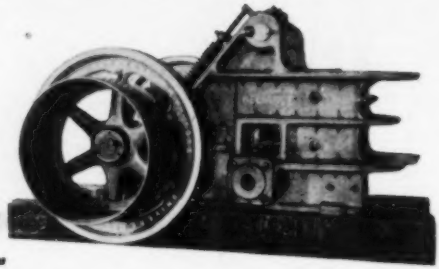
Chalk up top output and profit figures by single pass reduction of gravel with a RELIANCE Jaw Crusher.

RELIANCE Crushers are especially suited for this job—featuring rugged all-steel construction, low and large receiving openings, and long deep jaws for sure gripping and crushing. Jaws adjustable for fine or coarse product.

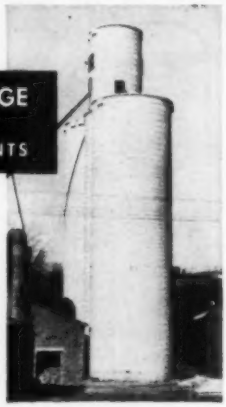
Fitted with Alemite high-pressure lubrication, smooth-running RELIANCE Jaw Crushers insure long, continuous service life and low-cost maintenance.

Write for Catalog No. 48, describing the RELIANCE complete line of sand and gravel washing and handling equipment.

UNIVERSAL ROAD MACHINERY CO., Kingston, N. Y.



VERTICAL STORAGE THAT DEFIES THE ELEMENTS



Neff & Fry Bins Built For Little Elevator Co., Rockford, Ohio

During the last 32 years, Neff & Fry Storage Bins have withstood practically everything Nature offers . . . heat, cold, moisture, corrosion . . . even fire and storm. This is due to the stonelike properties of N & F Super-Concrete Staves, plus the erection technique.

The staves have matching grooved and beaded edges. Each stave interlocks with six adjacent ones. For contents which must be kept dry, dampproofing is accomplished by buttering the edges of the staves with mastic compound, coating the inside and outside of the bin with neat cement, and then adding two coats of waterproofing compound to the outside. To withstand internal pressure, the structure is bound with galvanized steel rings, as illustrated in the accompanying photograph.

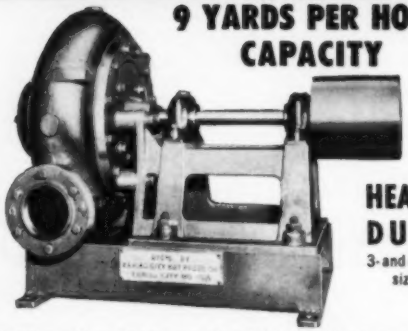
If you are interested in storage bins which last for generations, get all the facts about Neff & Fry Super-Concrete Stave Bins. Complete information is yours for the asking. Write, wire, or phone.

THE NEFF & FRY COMPANY, CAMDEN, OHIO

NEFF & FRY STORAGE BINS

The Right Pump to Fit the Job!

9 YARDS PER HOUR CAPACITY



HEAVY DUTY

3- and 4-inch sizes

Designed to fit the needs of the smaller operators ... and on jobs where working space is confined. Will pass solids up to 1½" and 2½" in diameter. Weighs 300 lbs. for 3" and 600 lbs. for 4" but is classed as a heavy-duty pump. Equipped with side plate liners.

Write for free literature and specifications. Ask us to help you with pumping problems.

THE KANSAS CITY HAY PRESS COMPANY
801 Woodswether Road Kansas City, Mo.

The Lightning
SAND & GRAVEL PUMPS

THE CORONA

Centrifugal Dust Collectors. Suction and Pressure Type. 480 CFM to 69000 CFM.

Of Various Metals from No. 22 to and including No. 7 gauge.

Efficient on all types of dust.

Piping, hoods, elbows and fittings to No. 7 gauge furnished to specifications.

It's the Inner Construction that Does the Work

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PERFORATED METAL SCREENS

FOR SAND, GRAVEL STONE, ETC.

Manufactured exactly to your specifications.

Any size or style screen, in thickness of steel wanted with any size perforation desired.

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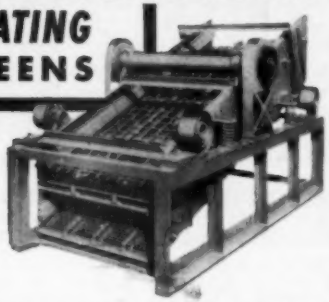
2433 W. 24TH PLACE CHICAGO, ILL.
Telephone CANAL 1489

OVERSTROM VIBRATING SCREENS



FOR LIGHT, MEDIUM and HEAVY DUTY SCREENING WET or DRY

The Double-Deck Heavy Duty 4' x 10' OVERSTROM Vibrating Screen illustrated is one of many types and sizes available for screening of crushed rock products, sand and gravel, limestone, cement, gypsum, borax, mining ores, salt, coal, coke, etc.

Screening machinery, engineered by pioneers and accepted by Industry throughout the world for the past 25 years, is available for various applications, in any type or size, single, double or triple-deck models, open type or dust-housed complete with hoppers and chutes fabricated to specifications.

Write to Screening Machinery Division for Bulletin S-4.

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the BOTTOM DUMP

Again BAUGHMAN leads! The versatile BAUGHMAN Self-Unloading body now is available with the bottom dump. Dumps road rock and other aggregates instantly through 4" opening along entire length of body bottom. Meets all highway requirements. Positive eccentric lever lock . . . will not leak when closed.

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Some Distributor Territory Still Open. We Also Invite Your Inquiry on BAUGHMAN Conveying and Elevating Equipment.

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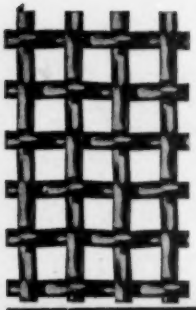
"There is a Baughman Distributor Near You"



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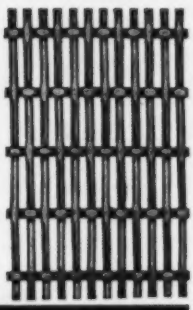
WOVEN WIRE SCREENS

For Accuracy, Capacity and Durability

TYLER SCREEN SECTIONS FOR ALL MAKES OF SCREENING MACHINES



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250	*G.E.	IK	600
250	*G.E.	IK	900
250	*Wstg.	CS	1800
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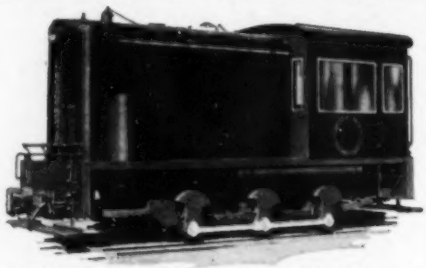

Cia. de Cemento Portland "Diamante", Bogota, Colombia, S. A. employs this 25-Ton, 0-6-0 Davenport Diesel Mechanical Locomotive, equipped with Caterpillar D-17,000 Engine.

Better-Built DAVENPORTS are AVAILABLE in STEAM GASOLINE DIESEL with ELECTRIC or MECHANICAL DRIVE

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Every rail operation is different! Length and frequency of trips; grades, curves, condition of rails; condition and kind of cars; size of loads—all these are pertinent and can lead to but one conclusion: For best results, your haulage power unit should be FITTED to your particular haulage operation.

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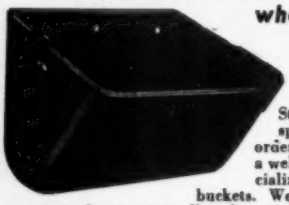
when you need

ELEVATOR BUCKETS



Standard designs or special buckets to your order. Skilled service in a well-equipped plant specializing in replacement buckets. Welded or riveted construction. Large or small orders given prompt and individual attention. Write for prices giving quantity, length, depth, projection, gauge of steel and type of bucket wanted.

STANDARD METAL MFG. COMPANY
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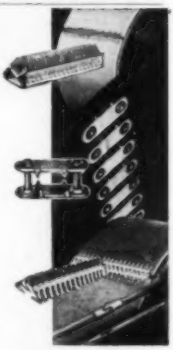
ARMSTRONG-BRAY



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FLEXAUST HOSE

Operates on Both Suction and Pressure • Lightweight • Very Flexible

For Dust Control and Many Gravity Feed Operations

Spiral wire reinforced hose specifically designed for dust control and many gravity feed operations. Many types available for special purposes. Write for Catalogue 30.

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STUCCO-PLASTER-CONCRETE
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CONVEYORS — FEEDERS
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Other scales to 50 ton capacity. All scales complete with structural steel weighbridge. Replacement parts for most all makes of scales.

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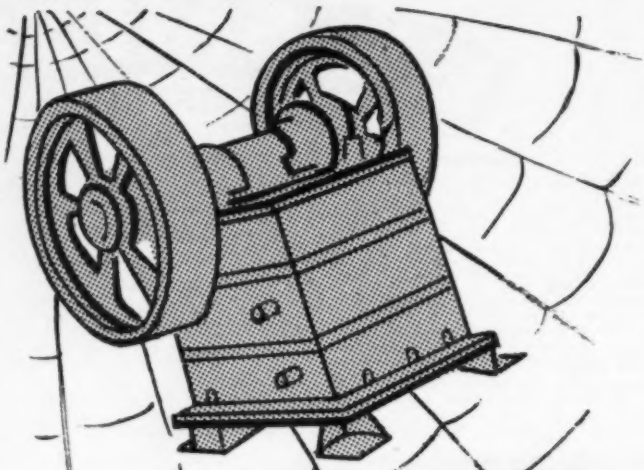

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500'—30" belt conveyors, roller bearing idlers
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42" belt conveyors
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18" belt conveyor with plain bearings
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Pullers, belt idlers and belt.
Portable belt conveyor, 18"x24', 5 hp. motor
Portable belt conveyor, 10"x10' with 3 HP motor
New Standard Wood Apron Conveyor, 48"x105'
Steel Apron Feeders, 18", 24" and 20" wide
24" and 20" belt trippers
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Champion jaw crusher, tap eccentric, 10"x28"
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Climax 10"x20" jaw crusher
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American Pulverizer, type ST-T
A.C. 3D, gyratory reduction crusher, short head

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36"	6	1/8" — 1/16"
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30"	5	1/8" — 1/16"
26"	5	1/8" — 1/32"
24"	5	1/8" — 1/32"
24"	4	1/8" — 1/32"
20"	5	1/8" — 1/32"
20"	4	1/8" — 1/32"
18"	4	1/8" — 1/32"
16"	4	1/8" — 1/32"
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45 ton Whitcomb diesel-elec. loco.
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160# vt. Boiler, 54" x 8' 5" Nat. Bd.
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LaPlante Choate Hydraulic Angledozer (1490 hrs.) Electric Starter—$8500

AUSTIN WESTERN 99M MOTOR GRADER 1942
Gasoline power, scarifier and cab—$4250

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Evergreen 3-5800

METROPOLITAN WATER SEWERAGE AND DRAINAGE BOARD SYDNEY, AUSTRALIA F. 5513.

Tenders in envelopes endorsed with the Plant Tender Number and addressed to The Secretary, 341 Pitt Street, Sydney, New South Wales, Australia, will be received until 2 p.m. on 2nd August, 1949 for the undermentioned.

Plant Tender No. 337.

Supply, Delivery and Erection of Sand Treatment Plant. No deposit. Security 1% of tender price from the successful tenderer only. Specifications and tender forms may be obtained from the Board by air mail application.

G. C. HICKS,
Secretary.

An advance copy of the Specification may be seen at the Office of the Australian Government Trade Commissioner, Room 426, 630 Fifth Avenue, New York 20, N. Y.

SALE or RENT

2—30-ton Overhead Traveling Cranes. 52' Span. New 1941.
1—30-ton Plymouth Std. Ga. Gasoline Locomotive. 1943.
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1—¼ yd. UNIT Crane and Dragline Model 514.
1—⅝ yd. Link Belt Model 75 Gas Shovel & Crane.
1—1½ yd. Northwest No. 6 Diesel Shovel.
1—80-D Northwest Diesel Shovel.
1—1½ yd. Koehring Model 604 S & C.
2—10-ton American Terry all steel Stiffleg Derricks.
1—30-ton Ohio Diesel Locomotive Crane. New 1946.
1—D7 Tractor w/Cable Blade DDPCU. 4T Series.

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Roustabout crane.
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Bay City ½ yd. dragline.
Osgood ⅝ yd. dragline.
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Lippman port. hammermill.
Hercules DJXC power unit.
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Pioneer 3x10 screen.
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Price $1400.00 f.o.b. cars.

1—5 NAR 24 x 16 DOUBLE ROLL NEW HOLLAND STONE CRUSHER, capacity 15 to 50 tons per hour.
Price $900.00 f.o.b. cars.

1—18 x 24 MCLANAHAN DOUBLE ROLL STONE CRUSHER, 1 belt pulley, 20 to 50 tons per hour.
Price $900.00 f.o.b. cars.

1—18 x 32 ACME JAW CRUSHER, steel plate frame.
Price $1200.00 f.o.b. cars.

1—10 x 20 ACME STEEL JAW CRUSHER.
Price $400.00 f.o.b. cars.

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Price $600.00 f.o.b. cars.

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1—10,000# Nordberg Sgl Drum AC
1—17,000# Ottumwa Sgl Drum AC
1—11,000# Ottumwa Sgl Drum AC
1—16,000# Allis Chalmers Sgl Drum
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1—11,000# Allis Chalmers Dbl Drum AC

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1—24x20 Pa. Sgl Roll
1—24x20 Dixie Hammer Mill
1—#75 Marcy Ball Mill

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Hough HLD 1 yd. Diesel Payloader.
10 Ton 8-Wheel Std. Ga. Gasoline Loco. Crane.
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Liberal discount from list price.

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Publication date is the 1st of the month; closing date is the 15th of the preceding month.

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ROCHESTER 1, N. Y.

METROPOLITAN WATER SEWERAGE AND DRAINAGE BOARD
SYDNEY, AUSTRALIA — F. 5514.

Tenders in envelopes endorsed with the Plant Tender Number and addressed to The Secretary, 341 Pitt Street, Sydney, New South Wales, Australia, will be received until 2 p.m. on 2nd August, 1949 for the undermentioned.

Plant Tender No. 330.

Supply and Delivery of up to eight (8) Concrete Buckets of Rated Capacity at least 8 cubic yards. No deposit, Security 1% of tender price from the successful tenderer only. Specification and tender forms may be obtained from the Board by air mail application.

G. C. HICKS,
Secretary.

An advance copy of the Specification may be seen at the Office of the Australian Government Trade Commissioner, Room 426, 630 Fifth Avenue, New York 20, N. Y.

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ALL OF THE ABOVE MACHINES ARE IN A-1 WORKING CONDITION.

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Complete $2,400.00

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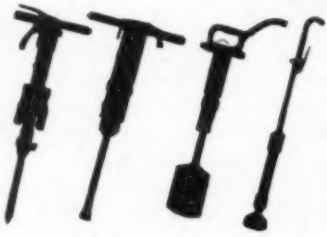

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